THE CHEMIST AND DRUGGIST

Editorial Notes.

OUR present number comprises so many articles affecting Chemists and Druggists that we have no occasion to blow our own trumpet. Still we may mention that our scheme for enlarging the Journal and extending certain special features has brought us much fresh support. We are now entering upon a period of agitation, when the efforts of the pharmaceutical press may be specially required to defend the interests of the trade, and we may remind our subscribers that our power increases with our circulation.

WHEN the Fenian outrage at Clerkenwell was the absorbing topic, many wild suggestions were advanced respecting the nature of the explosive agent used. Some newspaper correspondents stupidly contended that it was petroleum; others, with more reason, said it was nitro-glycerine; and Professor ATTFIELD gave his imagination free play in the hypothesis that the explosions at Clerkenwell and Newcastle were caused by portions of the same parcel of nitro-glycerine. The evidence of Dr. ODLING, Professor of Chemistry at St. Bartholomew's Hospital, proves that there was no difficulty in confirming the common belief that gunpowder was the agent used. The evidence of this distinguished chemist was to this effect:—"I received from Inspector THOMSON some staves of a barrel, and I examined them. I found in one of the staves a deposit which I scraped off, and which contained much sulphate of potash, the principal product of the explosion of gunpowder. I found that the interior of the staves had been split or broken in several places, and on tearing off the split portion I found underneath it small portions of unexploded gunpowder, which I removed and exploded. It was evidently a cask that had been used to store paraffin or petroleum oil. The cask had the appearance of having been burst by the explosion of gunpowder."

A BILL, prepared by Mr. POSTGATE of Birmingham, and entitled, "A Bill to amend an Act preventing the Adulteration of Food or Drink, Aug. 6th, 1860, 23 and 24 Victoria, cap 84, and to prevent the Adulteration of Drugs," has been placed in the hands of Mr. G. DIXON, M.P., to be introduced into Parliament next session. The provisions of the new Bill make the injurious adulteration of food, drink, and drugs, a misdemeanour, and a special clause increases the penalty to £50 for knowingly selling adulterated articles. The Bill also provides for the appointment by local authorities of analysts, and for the use of the present inspectors of nuisances in carrying out its intention. It is suggested that the quarterly reports of analysts shall be made public, that arrangements should be made so that purchasers may be able to obtain cheap analyses, and the inspection of manufactories be regularly conducted. The present Act leaves the purchaser to prosecute, and the authorities are not compelled to appoint analysts.

AN American jury has denounced the practice of prescribing by druggists. A girl died lately in Brooklyn, New York, from the effects of two grains of morphine prescribed for her by a druggist. The jury of inquest added to the verdict the following clause:—"We would call the attention of the authorities to the danger to the poorer classes for the want of a law making it a severe penal offence for any druggist to prescribe medicines himself, or allow them to be dispensed from his store except on a physician's prescription; and until such a law be executed, we suggest the propriety of the physicians belonging to the several schools of medicine using unusual vigilance where called to a patient, in ascertaining whether medicines have been prescribed by a druggist previous to their arrival."

IT is satisfactory to be able to record that, according to analyses made by Dr. LETHEBY and others of the bitumen from the celebrated pitch lake in Trinidad, it is likely to be extensively used for heating and lighting purposes. Experiments with this substance have also been made at Woolwich, which have resulted in a large quantity of the bitumen having been ordered by Government to make gas for the use of the Royal Arsenal.

A NUMBER of large manufacturers of perfumery have memorialised the Board of Trade upon the subject of spirits used in their trade. They complain that when an English manufacturing perfumer desires to convert spirit into perfumery, the Excise levy a duty of 16s. per gallon on the raw material, while the importation of spirit perfumed, such as Eau de Cologne, from the Continent at a fixed duty of 14s. per gallon, is permitted. It is obviously unjust to the home manufacturer to tax his raw material more heavily than the manufactured article produced abroad.

THE PHARMACY BILL.

THE HOME SECRETARY having intimated that he would receive a deputation from the Council of the Pharmaceutical Society, on the subject of a new Pharmacy Bill, on Tuesday, the 4th instant, the Parliamentary Committee was summoned to meet on that morning. Certain propositions had previously been left at the Home Office, embodying the principles agreed on between the Pharmaceutical Society and "outsiders," after the meeting at the London Coffee House in the early part of last year. For the benefit of all parties, Mr. HORNBY, of Sheffield, President of the United Society of Chemists and Druggists, and Messrs. PASS, MATTHEWS, and BETTY, of London, active members of the Executive Committee of that Society, together with Messrs. WADE and D'AUBNEY, were requested to attend the Committee. The Bill prepared by the Pharmaceutical Society having been discussed, and approved by all present, Messrs. HORNBY, PASS, and WADE were invited to join the deputation to the Home Secretary.

It was quite evident that Mr. GATHORNE HARDY, who received the deputation with the utmost courtesy, had well considered the question of pharmaceutical legislation, and, without giving any details of the conversation, we can state that he expressed his own personal approval, without exception, of the propositions submitted to him, and his conviction that an educational qualification for dispensers of medicine was highly desirable. The point which the Pharmaceutical Society was most anxious to urge was that the Government should introduce the Bill, or a Bill, into Parliament, thus giving it an increased chance of success. On this point Mr. HARDY required time to consult his colleagues, and, with a promise that he would do so and communicate afterwards with the President of the Pharmaceutical Society, he dismissed his visitors, informing them at the same time that he saw no chance of doing anything before Easter.

At last we have a fair prospect of a speedy settlement of the great question of pharmaceutical legislation, and we trust that no clouds will arise to spoil it. We believe that success mainly depends on union, and a discreet advocacy of the Bill. Nobody doubts that the interests of chemists and druggists would be advanced by legislation; but we fear that some of the advocates of an educational qualification are inclined to put this fact forth as a reason for parliamentary action. This is a great mistake. No pains should be spared to convince Parliament that the advantages to accrue to the *public* constitute an all-sufficient motive power.

A copy of the Bill as amended is printed in another part of our journal, ~~but we~~ may condense into a few words the provisions which specially concern our subscribers.

Chemists and Druggists now in business on their own account may, if they choose, remain exactly as they are, retaining possession of every privilege they now enjoy. "Chemists and Druggists" within the meaning of the Act are described in Clause 3.

They may on application, and production of certain certificates within a given period (a little over two years) be registered as "Chemists and Druggists" under this Act (Clause 7.)

They shall, if registered, be exempt from serving on juries (Clause 18); and

They shall be eligible to be elected Members of the Pharmaceutical Society (Clause 19).

As such members they shall be eligible for election to the Council of the Pharmaceutical Society (Clause 20).

Assistants and apprentices so engaged prior to the passing of the Act. Assistants of full age at the time of the passing of the Act, who have been engaged in dispensing and compounding prescriptions for "Pharmaceutical Chemists" or "Chemists and Druggists," and Apprentices of two years' standing may within a given time (a little more than two years), on application and production of certificates, be registered under this Act (Clause 4).

This registration would bring them within the meaning of Clause 1 and Clause 3.

They shall be eligible to be elected Associates of th Pharmaceutical Society (Clause 19).

These provisions ought to secure for the framers of the Bill the gratitude of all Chemists and Druggists. They do not interfere with any existing rights, and they place within the reach of every Chemist and Druggist in business on his own account the special privileges enjoyed by Members of the Pharmaceutical Society. We trust that the Chemists and Druggists of Great Britain will resist any attempt to divert them from the path of progress that is now open to them, and show the Government that they earnestly desire to elevate their calling, by warmly supporting this excellent educational Bill.

BEES SUPERSEDED.

EVERYBODY knows by heart the first verse of a moral song in which the busy bee is set up as the child's model—that verse which has been thus amended by a modern humourist:—

> "How doth the little busy bee
> The sprawling hours knit closer,
> By gath'ring honey constantly
> For every opening—grocer."

Admitting that the bee is a very superior creature, we cannot help thinking that its admirers, from Dr. Watts to Dr. Cumming, have been greatly influenced by the knowledge that honey is nice, and bee-keeping profitable. If the bee improved the shining hours by gathering something that could not be turned to account by the human race, its industry would probably excite little admiration.

Thanks to a correspondent, we are able to announce a discovery that is to put an end to bee-keeping, and degrade the busy bee to the level of other hexapods. No doubt many of our readers have seen a newspaper advertisement to the effect that any person, on applying to Mr. C. Monroe Brown, of Lumley-court, Strand, and enclosing two stamps, may learn how to make at enormous profit "an article of general consumption, as much a staple of food as flour is." Our correspondent, from curiosity, forwarded the two stamps, and received in return a long printed statement respecting a wonderful process for making *artificial honey*. This marvellous twopennyworth is now in our possession, and as Mr. C. Monroe Brown seems anxious to enrich his fellow-countrymen, we gladly give publicity to his philanthropic designs.

The twopennyworth opens with the following friendly letter:—

> "Dear Sir,—I am pleased that my advertisement attracted your attention, inasmuch as the application it has called forth will, if you so choose, result in your great benefit, and to the advantage of others. I have discovered, after years of patient labour, a great deal of chemical analysis and experiment, and much sacrifice of money and valuable time, a method of making a superior article of food. This discovery I have secured by copyright, and as the law is arbitrary, and as the penalties it imposes for the slightest infringement of its provisions are heavy, you will readily understand why I am secured in the possession of my recipe. For further and a full understanding of this discovery, which consists in a new method of making Honey, it will only be necessary for you to read my printed remarks below."

The discoverer then dilates on the value of honey "as a luxury, as a necessity in the sick chamber, as a health-conferring article of food, and as an elegant and delightful edible for the table;" and paints in sombre tints a dreadful picture of the bee-raiser who has grown grey among his ruinous hives. He next gives us glad tidings of the good time coming, when bees will cease from troubling, and the weary apiarist will rest. Speaking of honey, he says:—

> "I have shortened Nature's process of manufacturing this delightful article. My discovery embraces *the art of making Honey in every respect as good as that made by bees*, with, of course, none of the risks, labour, and other disadvantages attendant on the hive method. I am at liberty to mention here that one of the ingredients I use is the powdered bark of the slippery elm, *a small quantity of which will bring up a pailful of warm water to the rich, creamy, substantial consistency of Honey*. The medicinal value of this bark is known to everybody in the land. Even the women and the children are aware that it tones up the sinking system, gives strength to the weak, good spirits to the strong, purifies the blood of the scrofulous, restores appetite to the dyspeptic, etc. . . . There are seven other ingredients, without any one of which it would be impossible to give to any composition the true flavour, consistency, and chemical embodiment of pure Honey. The lack of the smallest pivot will render a watch worthless; remember that! My Honey has been tested by agriculturists, chemists, and others interested, at the request of heads of families and physicians, and in every case it has passed the ordeal triumphantly. It received the first prize in the last International Exhibition——"

Enough of this! Your honey, Mr. C. Monroe Brown, is either a creature of your imagination, or a detestable counterfeit! You may offer your recipe with the exclusive right to sell the stuff in a town for the modest sum of £1, and a percentage on the actual sales of one farthing per pound, but you will not find many dupes. For those who do fall into your cunningly spread net, we have no pity.

We have forwarded your precious statement to the Council of the Pharmaceutical Society, who may call you to account for using the title "Pharmaceutist." Unless you are registered as a Pharmaceutical Chemist, you have rendered yourself liable to a penalty which may not have been included in your estimate of the working expenses of the Laboratory at 7, Lumley-court, Strand, London.

A BILL
TO REGULATE THE SALE OF POISONS, AND ALTER AND AMEND THE PHARMACY ACT, 1852.

WHEREAS it is expedient for the safety of the public that persons keeping open shop for the retailing, dispensing, or compounding of poisons, or for the compounding the prescriptions of duly qualified medical practitioners, and commonly known as chemists and druggists, should possess a competent practical knowledge of their business, and to that end, that from and after the day herein named all persons not already engaged in such business should, before commencing such business, be duly examined as to their practical knowledge, and that a register should be kept as herein provided, and also that the Act passed in the 15th and 16th years of the reign of Her present Majesty, entitled An Act for Regulating the Qualification of Pharmaceutical Chemists, hereinafter described as the Pharmacy Act, should be amended: Be it enacted, by the Queen's Most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal and Commons in this present Parliament assembled, and by authority of the same:

Persons selling Poisons or compounding Prescriptions to be qualified.

1. From and after the 31st day of December, 1868, it shall be unlawful for any person to keep open shop for retailing, dispensing, or compounding poisons, or for compounding the prescriptions of duly qualified medical practitioners, or to assume or use the title "Chemist and Druggist" or Chemist or Druggist in any part of Great Britain unless such person shall be a Pharmaceutical Chemist, or a Chemist and Druggist within the meaning of this Act.

Poisons within the meaning of the Act.

2. The several articles named or described in the Schedule A shall be deemed to be poisons within the meaning of this Act, and the Council of the Pharmaceutical Society of Great Britain (hereinafter referred to as the Pharmaceutical Society) may, from time to time, by resolution declare, that any article in such resolution named ought to be deemed a poison within the meaning of this Act; and thereupon the Registrar hereinafter named shall submit such resolution to the Medical Council, and if the Medical Council shall resolve that such resolution ought to be confirmed, the said Registrar shall then submit the same for the approval of one of Her Majesty's Principal Secretaries of State, and if such approval shall be given, then such resolution, confirmation, and approval shall be advertised in the *London Gazette*, and on the expiration of one month from such advertisement, the article named in such resolution shall be deemed to be a poison within the meaning of this Act.

Chemists and Druggists within the meaning of the Act.

3. Chemists and Druggists within the meaning of this Act shall consist of all persons who, at any time heretofore, have carried on, in Great Britain, the business of a Chemist and Druggist, in the keeping of open shop for the compounding of the prescriptions of duly qualified medical practitioners, also of all assistants and associates duly registered under or according to the provisions of the Pharmacy Act, and also of all such persons as may be duly registered under this Act.

Apprentices and Assistants to be registered.

4. Any person who, for two years prior to the time of passing this Act, shall have been apprenticed to, or who, at the time of the passing of this Act, shall be of full age and shall have been actually engaged and employed in dispensing and compounding prescriptions, as assistant to any Pharmaceutical Chemist, or any such Chemist and Druggist as defined by Clause 3 hereof, may, on transmitting to the Registrar, before the 31st day of December, 1870, certificates, according to the Schedules D and E to this Act, be registered under this Act.

Chemists and Druggists in business may be registered.

5. Such of the Chemists and Druggists, defined by Clause 3, as may, on or before the 31st day of December, 1870, by notice in writing, signed by them, and given to the Registrar, request to be registered under this Act, shall, on production of certificates according to the Schedules C and D to this Act, be registered accordingly.

Examiners under Pharmacy Act to be the Examiners under this Act. Certificate of competent skill, etc.

6. All such persons as shall from time to time have been appointed to conduct examinations under the Pharmacy Act, shall be, and are hereby declared to be examiners for the purposes of this Act, and are hereby empowered and required to examine all such persons as shall tender themselves for examination under the provisions of this Act, and every person who shall have been examined by such examiners, and shall have obtained from them a certificate of competent skill and knowledge and qualification, shall be entitled to be registered as a Chemist and Druggist under this Act, and the examination aforesaid shall be such as is provided under the Pharmacy Act for the purposes of a qualification to be registered as assistant under that Act, or as the same may be varied from time to time by any bye law to be made in accordance with the Pharmacy Act, with the approbation of one of Her Majesty's Principal Secretaries of State.

Application of Fees to purpose of Pharmaceutical Society.

7. Such fees shall be payable upon every such examination and registration as aforesaid, as shall from time to time be fixed and determined by any bye law, to be made in accordance with the Pharmacy Act, with the approbation of one of Her Majesty's Principal Secretaries of State, and shall be paid to the Treasurer of the said Society, for the purposes of the said Society.

Registrar under Pharmacy Act to be Registrar under this Act.

8. The Registrar appointed, or to be appointed, under or by virtue of the Pharmacy Act, shall be Registrar for the purposes of this Act.

Council of Pharmaceutical Society to make orders for regulating Register to be kept.

9. The Council of the Pharmaceutical Society shall, with all convenient speed, after the passing of this Act, and from time to time, as occasion may require, make orders or regulations for regulating the register, to be kept under this Act as nearly as conveniently may be in accordance with the form set forth in the Schedule B, to this Act or to the like effect, and such register shall be called the Register of Chemists and Druggists.

Duty of Registrar to make and keep Register.

10. It shall be the duty of the Registrar to make and keep a correct register, in accordance with the provisions of this Act, of all persons who shall be entitled to be registered under this Act, and to erase the names of all registered persons who shall have died, and from time to time to make the necessary alterations in the addresses of the persons registered under this Act, to enable the Registrar duly to fulfil the duties imposed upon him, it shall be lawful for the Registrar to write a letter to any registered person, addressed to him according to his address on the register, to inquire whether he has ceased to carry on business or has changed his residence, and if no answer shall be returned to such letter within the period of six months from the sending of the letter, it shall be lawful to erase the name of such person from the register, provided always that the same may be restored by direction of the Council of the Pharmaceutical Society, should they think fit to make an order to that effect.

Notice of death of Pharmaceutical Chemist or

11. Every Registrar of Deaths in the United Kingdom, on receiving notice of the death of any Pharmaceutical Chemist, or Chemist and Druggist, shall forthwith transmit, by post, to the Registrar,

Chemist and Druggist to be given by Registrars.

under the Pharmacy Act, a certificate, under his own hand, of such death, with the particulars of the time and place of death, and may charge the cost of such certificate and transmission as an expense of his office, and on the receipt of such certificate, the said Registrar shall erase the name of such deceased Pharmaceutical Chemist, or Chemist and Druggist, from the register.

Evidence of Qualification to be given before Registration

12. No name shall be entered in the register, unless the Registrar be satisfied by the proper evidence, that the person claiming is entitled to be registered; and any appeal from the decision of the Registrar may be decided by the Council of the Pharmaceutical Society; and any entry which shall be proved to the satisfaction of such Council to have been fraudulently or incorrectly made, may be erased from or amended in the register, by order, in writing, of such Council.

Annual Register to be published and be evidence.

13. The Registrar shall, in every year, cause to be printed, published, and sold, a correct register of the names of all Pharmaceutical Chemists, and a correct register of all persons registered as Chemists and Druggists, and in such registers, respectively, the names shall be in alphabetical order, according to the surnames, with the respective residences, in the form set forth in Schedule B to this Act, or to the like effect, of all persons appearing on the register of Pharmaceutical Chemists, and on the register of Chemists and Druggists, on the 31st day of December last preceding, and such printed registers shall be called "The Registers of Pharmaceutical Chemists and Chemists and Druggists," and a printed copy of such registers for the time being, purporting to be so printed and published as aforesaid, or any certificate under the hand of the said Registrar, and countersigned by the President or two Members of the Council of the Pharmaceutical Society, shall be evidence in all Courts and before all Justices of the Peace and others, that the persons therein specified are registered according to the provisions of the Pharmacy Act or of this Act, as the case may be, and the absence of the name of any person from such printed register shall be evidence, until the contrary shall be made to appear, that such person is not registered according to the provisions of the Pharmacy Act or of this Act.

Penalty on wilful falsification of Register, or for obtaining registration by false representation.

14. Any Registrar who shall wilfully make or cause to be made any falsification in any matter relating to the said registers, and any person who shall wilfully procure or attempt to procure himself to be registered under the Pharmacy Act or under this Act, by making or producing or causing to be made or produced any false or fraudulent representation or declaration, either verbally or in writing, and any person aiding or assisting him therein, shall be deemed guilty of a misdemeanour in England, and in Scotland of a crime or offence punishable by fine or imprisonment, and shall on conviction thereof be sentenced to be imprisoned for any term not exceeding twelve months.

Protection of Titles.

15. Any person keeping an open shop for the retailing, dispensing, or compounding poisons, or for compounding the prescriptions of duly qualified medical practitioners, or who shall take, use, or exhibit the name or title of Chemist and Druggist or Chemist or Druggist, not being a duly qualified Pharmaceutical Chemist or a Chemist and Druggist, or shall take, use, or exhibit the name or title Pharmaceutical Chemist or Pharmaceutist or Pharmacist, not being a Pharmaceutical Chemist, shall, for every such offence, be liable to pay a penalty or sum of £5, and the same may be sued for and recovered in the manner provided by the Pharmacy Act for the recovery of penalties under that Act, and shall be dealt with as the Commissioners of Her Majesty's Treasury shall direct.

Reserving rights of certain persons.

16. Nothing hereinbefore contained shall extend to interfere with the business of any duly qualified medical practitioner or of any member of the Royal College of Veterinary Surgeons of Great Britain, nor with the making or dealing in patent medicines, nor with the business of wholesale dealers in supplying poisons to retail dealers in the ordinary course of wholesale dealing, nor with the retailing of poisons for use in manufactures or photography; and upon the decease of any Pharmaceutical Chemist or Chemist and Druggist actually in business at the time of his death, it shall be lawful for any executor, administrator, or trustee of the estate of such Pharmaceutical Chemist or Chemist and Druggist to continue such business if and so long only as such business shall be *bonâ fide* conducted by a duly qualified assistant, and a duly qualified assistant within the meaning of this Clause shall be a Pharmaceutical Chemist or a Chemist and Druggist registered by the Registrar under the Pharmacy Act or this Act.

Poisons to be distinctly labelled. Penalty on omissions.

17. It shall not be lawful to sell, give, or deliver any poison, either wholesale or by retail, or in a solid or liquid state, unless the box, bottle, vessel, wrapper, or cover in which such poison is contained be distinctly labelled with the name of the article and the word poison, and with the name and address of the seller, giver, or deliverer of the poison, and any seller, giver, or deliverer of any poison not so distinctly labelled, shall, upon a summary conviction before two justices of the peace in England or the sheriff in Scotland, be liable to a penalty not exceeding £5 for the first offence, and to a penalty not exceeding £10 for the second offence, and for the purposes of this Clause the person on whose behalf any sale is made by any apprentice or servant shall be deemed to be the seller, but the provisions of this Clause shall not apply to articles to be exported from Great Britain.

Registered persons exempt from Juries.

18. All persons registered under this Act shall be exempt from service on juries.

Chemists and Druggists in business prior to passing of Act eligible for election as Members of Pharmaceutical Society.

19. Every person who, at the time of the passing of this Act, is or has been in business on his own account as a Chemist and Druggist, as aforesaid, and who shall be registered as a Chemist and Druggist, shall be eligible to be elected and continue a member of the Pharmaceutical Society according to the bye laws thereof; but no person shall, in right of membership acquired pursuant to this Clause, be placed on the Register of Pharmaceutical Chemists, nor, save as is hereinafter expressly provided, be eligible for election to the Council of the Pharmaceutical Society, and every apprentice and assistant, as described in Clause 4 of this Act, who shall cause his name to be registered, as provided in that clause, shall be eligible to be elected and continue an associate of the Pharmaceutical Society, according to the bye laws thereof.

Apprentices and Assistants eligible for election as associates.

Council of Pharmaceutical Society.

20. Every person who is or has been in business on his own account as a Chemist and Druggist as aforesaid at the time of the passing of this Act, and who shall become a member of the Pharmaceutical Society, shall be eligible for election to the Council of the Pharmaceutical Society; but the said Council shall not at any time contain more than seven members who are not on the Register of Pharmaceutical Chemists, nor more than seven members who shall not at the time of election *bonâ fide* reside within twelve miles by highway or road from the General Post-Office in St. Martin's-le-Grand.

Chemists and Druggists, having been examined, and being in business, t be eligible to be associates and have the privilege of voting in the Society.

21. Every person who shall have been registered as a Chemist and Druggist under this Act, by reason of having obtained a certificate of qualification from the Board of Examiners, as provided in Clause 6 of this Act, shall be eligible to be elected an associate of the Pharmaceutical Society, and every such person so elected and continuing as such associate, being in business on his own account, shall have the privilege of attending all meetings of the said society and of voting thereat,

and otherwise taking part in the proceedings of such meetings, in the same manner as members of the said society; provided always that such associates contribute to the funds of the said society the same fees or subscriptions as members contribute for the time being under the bye laws thereof.

Voting Papers for election of Council.

22. At all meetings of the Pharmaceutical Society at which votes shall be given for the election of officers, all or any of the votes may be given either personally or by voting papers, in a form to be defined in the bye laws of the said society, or in a form to the like effect, such voting papers being transmitted under cover to the secretary, not less than one clear day prior to the day on which the election is to take place.

Benevolent Fund may be applied to past members and associates, also to Pharmaceutical Chemists and registered Chemists and Druggists.

23. And whereas by the Charter of Incorporation of the said Pharmaceutical Society it is provided that the Council of the said Society shall have the sole control and management of the real and personal property of the said Society, subject to the Bye Laws thereof, and shall make provision thereout, or out of such part thereof as they shall think proper, for the relief of the distressed members or associates of the said Society, and their widows and orphans, subject to the Regulations and Bye Laws of the said Society. And whereas, for extending the benefits which have resulted from the said provision in the said Charter of Incorporation, it is desirable that additional power should be granted to the said Council, be it enacted that from and after the passing of this Act, the said Council may make provision out of the real and personal property aforesaid, and out of any special fund, known as the Benevolent Fund, not only for the relief of the distressed members or associates of the said Society and their widows and orphans, subject to the said Regulations and Bye Laws, but also for all persons who may have been and have ceased to be members or associates of the said Society, or who may be or have been duly registered as "Pharmaceutical Chemists" or "Chemists and Druggists," and the widows and orphans of such persons, subject to the Regulations and Bye Laws of the said Society.

24. This Act may be cited as the Pharmacy Act, 1868.

SCHEDULE A.

Arsenic and its preparations.
Oxalic Acid.
Prussic Acid.
Chloroform.
Cyanides of Potassium and Mercury.
Strychnine and all poisonous vegetable alkaloids and their Salts.
Aconite and its preparations.
Emetic Tartar.
Corrosive Sublimate.
Belladonna and its preparations.
Essential Oil of Almonds, unless deprived of its Prussic Acid.
Cantharides.
Savin and its Oil.

SCHEDULE B.

Name.	Residence.	Qualification.
A. B.	Oxford Street, London.	In business prior to Pharmacy Act, 1868.
C. D.	George Street, Edinburgh.	Examined and certified.
E. F.	Cheapside, London.	Apprentice or Assistant prior to Pharmacy Act, 1868.

SCHEDULE C.

Declaration by a person who was in Business as a Chemist and Druggist in Great Britain before the Pharmacy Act, 1868.

To the Registrar of the Pharmaceutical Society of Great Britain.

I, residing at , in the County of , hereby declare that I was in business as a Chemist and Druggist, in the keeping of open shop for the compounding of the Prescriptions of duly qualified Medical Practitioners at in the County of , on or before the day of , 186.

Signed (Name).

Dated this day of 18 .

SCHEDULE D.

Declaration to be signed by a duly qualified Medical Practitioner respecting a person who was in business as a Chemist and Druggist in Great Britain, before the Pharmacy Act, 1868.

To the Registrar of the Pharmaceutical Society of Great Britain.

I, , residing at , in the County of , hereby declare that I am a duly qualified Medical Practitioner, and that to my knowledge , residing at , in the County of , was in business as a Chemist and Druggist, in the keeping of open shop for the compounding of the Prescriptions of duly qualified Medical Practitioners before the day of 186 .

Signed

SCHEDULE E.

Declaration to be signed by and on behalf of any Apprentice or Assistant claiming to be registered under the Pharmacy Act, 1868.

To the Registrar of the Pharmaceutical Society of Great Britain.

We hereby declare that the undersigned , residing at in the County of , had before the passing of the Pharmacy Act, 1868, been employed in dispensing and compounding Prescriptions, as an Assistant to a Pharmaceutical Chemist and Druggist, and attained the age of twenty-one years, or had been apprenticed to a Pharmaceutical Chemist or Chemist and Druggist.

As witness our hands, this day of , 186 .

A. B., duly qualified Medical Practitioner.
C. D., Pharmaceutical Chemist.
E. F., Chemist and Druggist.
G. H., the Assistant or Student.

Report
ON THE CONDITION AND PRACTICES
OF THE
VARIOUS CLASSES CONNECTED WITH
The Drug Trade.

II. THE MEDICAL HERBALIST.

THE herbalist quack is a fellow as pretentious as he is ignorant. The man who keeps the "medical hall," or he who is proprietor of the establishment where "Coffin's" remedies are sold, makes an attempt to imitate the arrangement and appearance of the genuine chemist and druggist's shop, where order, cleanliness, and skilful arrangement prevail; but with your pompous herbalist it is quite the reverse. He is beyond the pale, and he makes a loud boast of it. He is defiant in his antagonism to the respectable and honourable vendor of drugs, whom in his handbills and flaring show-cards he is wont to address in terms which are particularly applicable to himself and to his unworthy calling. His method of puffing his own wares is to abuse the remedies to be purchased from the respectable trader, whom he endeavours to make appear as a rapacious ogre, with one thought and one aim only—to fleece the public. "Come to my shop," he says, "and here you may get as much medicine for a few halfpence as will cost you several shillings at the chemists and druggists' shops." His low prices are certainly a bait at which the ignorant and unwary nibble eagerly. Pills by the pint, ointment by the jar, and sarsaparilla by the pailful, all for a few coppers. A large quantity for a little money, such is the disguise under which the herbalist quack deceives the hard-working, easily-gulled inhabitants of the poorer districts of the metropolis.

The depôts of the herbalist, the worm doctor, and the curer of unclean diseases—very frequently the three are combined—have a strong family likeness each to the other. To describe one would be enough to indicate the characteristic appearances of the whole.

On the Surrey side of the Thames, and in the vicinity of the "Elephant and Castle," the herbalist drives his briskest trade. Let us take a glance at one of these establishments. Over the door is a red lamp, whereon is written in white letters, "Grandmother's Cough Lozenges." It is a corner house, commanding the entrances to several lines of thoroughfare, with ample double windows, in which are stowed numberless fascines of sarsaparilla, over which are thrown countless boxes of the herbalist's grandmother's nostrum. By way of attaching a scientific character to the collection, a few bottles containing buchu leaves, elder flowers, and pennyroyal are placed upon a shelf above. On the wall of the house, in a glass case, are tubes as long as the waxen tapers in a Roman Catholic cathedral, and stout squat bottles filled with intestinal worms. A placard in the window informs us that by means of the "herbal system of medicine, ulcerated wounds (old or recent), boils, dropsy, scrofula, ringworm, bald head, varicose veins, etc., may be cured. Consultation free."

Everything is cheap here—with the concomitant nastiness, of course. You may obtain a large wooden box full of the grandmother lozenge for twopence halfpenny, including a puffing label on the top, whereon the trade-mark is the effigy of the grandmother, an old dame with spectacles and a broad grin.

We purchased a box, and found them—or, more precisely, one of them—inexpressibly nauseating, and quite equal to the character given to them by the proprietor, who informs the world that his lozenges are "*not* a very scientific remedy, *not* found in the Pharmacopœia, *not* approved of by the Faculty; but simply an old woman's remedy, in which Nature's medicine, herbs, are solely used."

The quack who possesses the invaluable secret for compounding the "grandmother" has also a poet in his pay, who thus apostrophises the venerable lady with the broad grin and the spectacles :—

TO MY GRANDMOTHER.

"The winter of our discontent" draws nigh,
When coughs assail, and colds they make us cry
"Oh! fervently I wish that thou wert by,
My Grandmother."

For when a child (now many years ago),
I trudg'd to school through wind and drifting snow,
Who watched when signs of cough began to show?
My Grandmother.

'Twas thou with healing art came to my aid,
And quickly then a herbal potion made,
That cured me, and *no Doctor to be paid!*
My Grandmother.

Thou had'st thy store of herbs hung up on high,
Pluck'd when in season, and with care kept dry,
For many anxious were thy skill to try,
My Grandmother.

The bitter Horehound from its bed you'd pick,
The large-leaf'd Coltsfoot, growing short and thick,
Marshmallow, too, gathered when I was sick,
My Grandmother.

The Lungs, too, from the Oak, you'd search for them,
With Aniseed, so soothing, stripp'd from stem,
And Lozenges right good you'd make from them,
My Grandmother.

Compounded from her herbs, Dame Nature's cure,
Minus fandangled names, that puzzle and lure,
Relief they've given to thousands, I am sure,
My Grandmother.

How all the clever doctors of the town
On thine own simple remedies would frown;
But *No!*—Their utmost art could ne'er put down
My Grandmother.

Then, with sublime contempt for doctor's skill,
A simple herb you'd find for every ill;
For little faith had you in dose or pill,
My Grandmother.

"Culpepper's Herbal" was the only book
In which for knowledge you would deign to look;
And oh! what lots of Herbs I've seen you cook,
My Grandmother.

Let others, then, deride, and laugh their fill,
And ridicule cast on thy humble skill,
But who should doctor me if I were ill?
My Grandmother.

Death's chilling hand from me at last did sever
This dear old soul, so kind, so good, so clever;
But thy sweet remedies will live for ever,
My Grandmother.

The entrance to the herbalist's, or, as the proprietor elects to call it, the "Sarsaparilla Stores," is facile enough. Just two steps to ascend, and you are in the shop. Hanging in thick bundles from the ceiling, like so many herbal stalactites, are many sorts of herbs, well dried and smoked by the gas. The counter is strewed with the various quack nostrums in most admired disorder. In the centre there is a small pair of rusty scales, and a bird cage, in which a canary of very sooty plumage is engaged in throwing his diet over the counter, on which, by the way, there is mould enough to germinate it if it were allowed to remain long enough.

A customer who has entered before ourselves, is evidently an *habitué*, and well acquainted with the ways of the place, as he is summoning the proprietor or his assistant by stamping his foot upon the floor.

Presently an untidy little woman, struggling with the weight of a very large and heavy baby, comes upstairs and enters the shop. The customer and the little woman exchange greetings, enquiry is made for the herbalist, who is stated to be busy below making ointment, as "they are quite out of it, almost all sold last Sunday morning."

"Let's have a glass, missis," says the customer; whereupon the little woman runs into the back parlour, deposits the infantile encumbrance, which immediately gives vent to a series of violent screams, and, going to a beer-engine, draws a large glassful of a brown liquid with a thin white froth upon it. Customer takes a long pull at the mixture, and, putting down the tumbler, "Do you know," he says to the little woman, "I quite misses this if I don't have it regular, now." The little woman nods her head as if to say, "no doubt."

After watching these proceedings with the deepest interest, we endeavour to arrive at a settled opinion relative to the brown liquid; but fruitlessly. Our turn to be attended to has come, and a box of lozenges is retailed to us—a very lengthy proceeding, during which two visits have been paid to the remonstrating infant in the back parlour, and the whole shop has been ransacked for a piece of string to tie up the box. Little Mrs. Herbalist is a mild, civil enough body, and as she hands us our change, we ask her what it is she draws from the brass beer-tap. "Sarsaparilla, sir," she answers; "A glass of Sarsaparilla, and a Lozenge after it, for twopence."

A lavish bestowal of handbills upon us takes place. These documents make us aware that, among other things, the "dose of Sarsaparilla is one tablespoonful, three times a day in a glass of water. Bottles containing twelve doses, one shilling; eighteen doses, one shilling and fivepence; twenty doses, two shillings; eighty doses (a month's treatment), five shillings. Cases containing five five shilling bottles, one guinea. The recipe for making the simple decoction from the root, may be had within, *free!* Sarsaparilla Jam, 6d. and 8d. per lb., in your own basins. Mr. Herbalist may be consulted daily on all diseases. Advice gratis. A private room for confidential cases." Philanthropic, magnanimous Herbalist!

Quantity rather than quality is one of the primary rules in the herbalist's trade. Everything here appears to be sold in bulk, even the low-priced twopenny packet, labelled the "Anti-scorbutic Mixture of Herbs," is quite a large parcel to be stuffed into the pocket.

Under the herbalistic hygiene, you must be a large consumer; gallons of herb infusion, of Sarsaparilla extract, must be swallowed; pounds of ointment must be rubbed in. A twopenny packet of herbs is sufficient to make "one quart of infusion;" a "sixpenny packet" will afford four quarts. Can anything be cheaper? Should you have any doubts in your mind relative to the healing powers of this remarkably economical stuff, hear what Mr. Herbalist has to say respecting his wares:—"If suffering from Jaundice use Mr. Herbalist's Mixture of Herbs, as they have cured many who have been trying everything recommended without benefit, but have been cured by this Mixture of Herbs in a few days. Mr. Herbalist has likewise a powerful Diuretic Mixture of Herbs that will give great relief, and in many cases cure the Dropsy, Gravel, Complaints of the Kidneys, etc., in a very short time; also mixed Stomachic Bitters, for Bile, Indigestion, Loss of Appetite, Liver Complaints, etc., Mixed Herbs for Coughs, Colds, Asthma, etc., which give great relief to all troubled with these disagreeable winter companions; likewise a mixture of Herbs that will in a few days, sometimes in a few hours, remove all pains from the limbs and body caused by Rheumatism, persons subject to this distressing complaint, should take a wine-glassful of this Infusion frequently as a preventive."

If the customer be of a naturally nervous disposition of mind, and the unhappy subject of occult and disagreeable stomachic symptoms, a glance at the terrible glass case, with the long tubes and the squat bottles filled with ugly entozoa, will infallibly drive him into Mr. Herbalist's back parlour, or private consulting room, as he terms it, with a professional pride worthy of a better cause. Does not Mr. Herbalist inform him that "you may suffer from the dire effects of these parasites without the slightest idea you possess them." "They possess you" would perhaps be an improved locution, Mr. Herbalist.

"People are treated by the faculty for consumption, liver complaint, indigestion, and many other diseases, but medicine is of no avail, they drag through life, a mystery to themselves and to their physicians. Many suffering as above, have applied to Mr. Herbalist, and from their symptoms, he has at once detected the presence of tape worm, and he has treated them accordingly with uniform success. The treatment for the cure of tape worms, is really very little understood by the faculty, their principal remedy being turpentine and castor oil, punishing the patient to a dreadful degree, as any one that has taken it can testify. The late Dr. G., of Long Acre, was the only practitioner who gave these cases anything like attention, but his treatment seems to have died with him. Mr. Herbalist's treatment, is a very simple one, purely herbal, perfectly safe, and certain in its effect, requiring no hindrance from business. The thousands of worms to be seen at his establishment, is a proof of his success; every kind of worm yields to his treatment, whether from the infant in the cradle, or the adult."

The likeness of one herbalist's shop to another, and the similarity between the medicines sold therein are remarkably strong—much too close to be the result of mere coincidence. The placards, the bed of sarsaparilla, upon which rest the pills, the ointment, and the extract are arranged after the same model in all. Sometimes, however, a more than usually energetic and pushing quack will hit upon an original "dodge," like the following:—In the window of the impostor before which we are now standing there is a small glass shade, placed upon a stand. Within the glass there is a small red pin-cushion. On this pin-cushion there reposes a large clumsily-made ring, the stone in which reflects the light just like the doubtful "Lowther Arcade" rubies whose lustre is due to a backing of tinsel foil paper. "This gold ring," a small ticket tells us, "was presented to Mr. Herbalist by a gentleman whom he cured of a complaint after others had failed. This gentleman had spent upwards of £100 for advice and medicine before he applied to Mr. Herbalist."

A prominent feature in this depot is the "Mountain Herb Pill, a help to nature." After exhausting the medical dictionary for a list of diseases which have succumbed to the Mountain Pill, the proprietor states that 111,000 of them were sold during the year 1867.

He does not, however, inform us by how many the figures in the tables of mortality were reduced in consequence of this large consumption, during the past year, of the mountain marvel. The quack proceeds: "they are peculiarly adapted to the requirements of nature. Keep them in store. Prove them. Hold fast to that which is good."

Such are the baits set by these cunning cheats for the ignorant and incautious dwellers in the poorest and most densely populated quarters of this metropolis—baits which are swallowed as greedily as the pike slips the gudgeon within his maw.

Perhaps throughout the whole range of cheating and imposture there is no form more baneful in its effects than this. Were it only the herb infusion, the ointment, or the sarsaparilla extract—which are probably as harmless as they are useless—there would be no great evil to complain of. The real facts of the case are, however, of a much darker complexion. The poor and uneducated patient in whose frame lurks the seeds of a fatal disease applies to this quack. Skill and the administration of proper remedies might eradicate the death-begetting taint were the patient to apply to a properly trained professional man; but, from the moment he enters that herbalist's direful back-parlour and consults that apostle of humbug, whose only aim is to get hold of as much of his customer's money as he can, the doom of the sick man is sealed; and his death will be due to his dealings with an illiterate impostor.

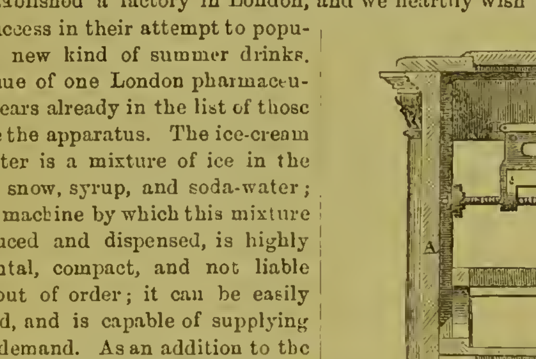
DOWS, CLARK, AND VAN WINKLE'S ICE-CREAM SODA-WATER APPARATUS.

Our pharmaceutical brethren in the United States and Canada have accepted the dispensing of aërated waters as a legitimate source of profit, and the preparation of delicate flavouring syrups as an essential part of practical pharmacy. The apothecary's soda counter is, in fact, an American institution antagonistic to the bar at which gin-slings, sherry-cobblers, cock-tails, mint-juleps, brandy-smashes, fiscal agents, and other alluring drinks are obtainable. In Parrish's *Pharmacy* many pages are devoted to directions for making and dispensing carbonic acid water, and to formulas for flavouring syrups; and according to the author of this work one of the specific duties of the junior apprentice in a "pharmaceutical store" is "to keep the mineral water counter clean, and the syrup bottles filled."

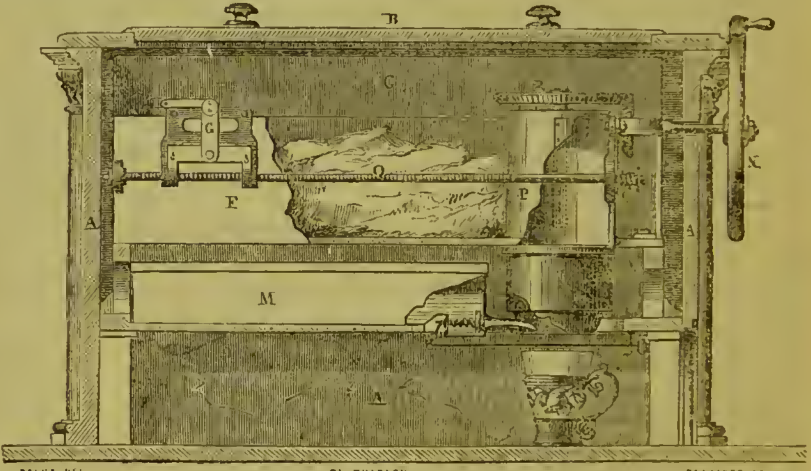
The visitors to the late Paris Exhibition had an opportunity of tasting the last product of American ingenuity applied to the preparation of summer drinks at the restaurant of Messrs. Dows, Clark, and Van Winkle, whose ice-cream soda-water apparatus is the subject of this note. The beverages drawn from their marble fountains were highly commended by the special correspondents of our daily contemporaries, and were thus referred to by a well-known writer in *Once a Week*:—"The Yankees have brought their inventive genius to bear on the soda drinks dispensed at the cool and pleasant bars, with fountains bubbling ever over the tumblers, with the silver taps shining in the sun-light, and nothing more noxious in them than delicate fruit flavours or ginger for those of slack stomach. The cream frothed with the sparkling soda, and flavoured with the pine, is grateful to the daintiest lips. It is whispered that these soda-drinks are to be set up in every populous corner of Europe. They will be welcome to the sober Spaniard, to the Italian, and to the Frenchman who is not in the fiery grip of the monster absinthe. Thrice welcome should they be in England, where there are few men who know how to eat as the Montmaurs understand eating, with head and heart as well as knife and fork and teeth, because so many have deadened their taste with strong drinks. If Dows will take Clark by the arm, and insist upon Van Winkle's company; and if the valiant three will land in England, bent on beating down drams not with prosy pamphlets (the very dulness of which, it is my belief, drives many men to the bottle), but with their creaming tumblers, I will make bold to promise them a hearty welcome."

The patentees of the ice cream soda-water apparatus have just established a factory in London, and we heartily wish them success in their attempt to popularise a new kind of summer drinks. The name of one London pharmaceutist appears already in the list of those who use the apparatus. The ice-cream soda-water is a mixture of ice in the form of snow, syrup, and soda-water; and the machine by which this mixture is produced and dispensed, is highly ornamental, compact, and not liable to get out of order; it can be easily managed, and is capable of supplying a large demand. As an addition to the stock in trade of the chemist and druggist it is undoubtedly one of the most important articles that has yet come under our notice.

From the annexed woodcut our readers may obtain an idea of the external appearance of an apparatus capable of supplying eight different syrups, soda-water, and ice-cream.



EIGHT-SYRUP APPARATUS WITH ONE DRAUGHT TUBE.



SECTION SHOWING ICE-CUTTER AND CREAM CAN.

The case is made of highly-polished Italian marble. The syrup cocks are arranged in front, and connected with screws and nuts with the syrup cans inside. Over each syrup cock is a silver plate with the name of the syrup engraved. Above these plates in the centre is the draught tube which supplies the soda-water. The outer end is panelled, and bears a silver plate with the names of the patentees and date of patent. From the inner end, or that next the operator, projects a silver-plated crank with balance-wheel, which operates the ice-cutter. The cover is formed of two slabs of marble, hinged in such a manner that easy access may be had to the interior. The whole apparatus is 30 inches long, 19 inches high, and 19 inches wide. This is a very convenient size for a moderate business. The apparatus may be adapted for ten or twelve syrups, and for two or more draught tubes. There is another form of apparatus, double, with cocks at each side adapted for supplying sixteen, eighteen, twenty, or twenty-four syrups, and with as many draught tubes as are required.

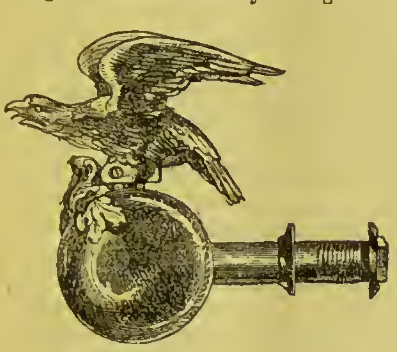
The single apparatus represented above is divided longitudinally into two compartments. In the front compartment the syrup cans and the soda-water cylinder are disposed. The cans are tall narrow vessels with flat sides, into which the syrup cocks pass through holes in the marble case. They are made of pure block tin. The soda-water cylinder, which is placed behind the row of cans, is connected by pipes with a reservoir or fountain charged with soda-water and with the draught-pipe; it is provided with a dome and a blow-off cock, by means of which superfluous gas can be got rid of when the pressure is too great. This cylinder is constructed of copper, thickly coated inside and out with tin. The space between the syrup cans and the soda-water cylinder is packed with small pieces of rough ice by which the temperature of all the liquids is kept at the freezing point of water. A pipe is provided for carrying off the waste water from the ice-chamber.

The back compartment contains the ice-cutter and the cream-can, the construction and disposition of which will be readily understood on referring to the annexed cut.

A is the marble case, and B the cover; M is the cream-can, with a cock worked by a wire leading to the arched opening in the case; E is the ice-cutter box; P a cylinder with longitudinal openings, in which knives are fixed in such a manner that they shave the ice very finely; G is the follower, which pushes the ice against the cylinder; O is one of the screws by which a slow motion is communicated to the follower; and N is the balance-wheel.

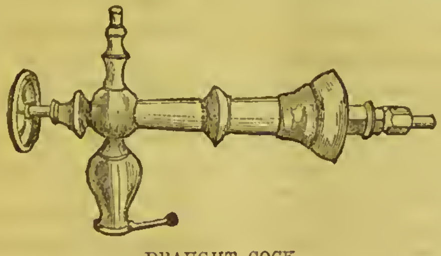
The method of working the ice cutter is thus described:—"Take hold of the rod which passes across the follower, and throw it over in a semicircle, and it will free the follower so that it can be moved with the hand from one end of the ice-chamber to the other; put a long piece of pure ice into the chamber, close up to the cylinder, bring the follower against the ice, and throw the rod back, turn the balance-wheel, and the follower presses the ice against the knives in the cylinder, which shave it off like snow, which passing inside, drops into the tumbler placed to receive it, and to which the cream can be added at the same moment from the cream can by pulling the handle; thus in two seconds you have a splendid ice cream, to which add the syrup and soda-water, which dissolve the ice, and you have the coldest and most delicious glass of soda-water ever yet produced."

The syrup cock is in itself a very noteworthy novelty. Its design is a globe surmounted by an eagle. The bird on being pressed forward acts as a lever to open a valve at the bottom of the globe and discharge the syrup. These cocks are heavily silver-plated both inside and out, are very ornamental, self-closing, can be opened with perfect ease, and, what is most important, they never drip.



SYRUP COCK.

Another part of the apparatus which must be noticed is an improved draught cock specially adapted for supplying liquid highly charged with gas. The mode of using it is thus described by the patentees:—"After putting the ice, cream, and syrup into the tumbler, open the valve as usual, and the stream escaping with full force, thoroughly mixes the compound; then bring the edge of the tumbler against the under side of the projecting lever, open the valve still wider, and a larger stream, without force, will flow, highly impregnated with gas, and you fill your tumbler in a moment with sparkling soda water. When you have once thrown the lever in position, the tumbler may be removed, the lever assuming its former position when the discharge is discontinued. In drawing plain soda water, the lever should be thrown up before opening the valve." The action of the projecting lever is very simple. On being pressed up by the edge of the tumbler, it brings a little cup-like valve into the centre of the tube, and the force of the stream of soda-water is thus diminished.



DRAUGHT COCK.

Many other inventions connected with the manufacture and dispensing of aerated beverages have been introduced by this enterprising firm, and we shall probably notice some of them in future numbers of our journal.

We understand that Messrs. Dows, Clark, and Van Winkle are prepared to supply soda-water in large copper fountains adapted to their apparatus, together with formulas for all kinds of syrups. In fact they seem determined to reform the English system of dispensing summer drinks.

Of course the apparatus we have described may be used for drawing simple soda-water as well as for producing the improved beverage.

SCIENCE

ON THE RELATION OF SCIENCE TO BIRMINGHAM MANUFACTURES.*

BY GEORGE GORE, F.R.S.

At the present time, when public attention is beginning to be directed to the general deficiency of technical scientific education in this country, it may perhaps be of advantage to illustrate the fact that our national success in trade is largely dependent upon the cultivation of science. To Birmingham this fact is of especial importance—first, because of the general scientific character of its manufacturers; and second, because of the great number of new inventions which are here originated and carried into practice.

To thinking minds there is no need of arguments to convince, or even of illustration to pourtray, the essential dependence of commercial, artistic, and manufacturing prosperity, upon abstract scientific investigation, but to general readers it is advisable to offer a few remarks upon the subject. At first sight it may appear that there is no necessary connection between abstract science and commercial and manufacturing operations; that scientific investigation is at the best but an ingenious exercise of the mind, and of no practical value; but upon deeper consideration, and with the aid of the following remarks, that opinion will probably be modified.

As we are going to speak of science and its relations to trade, it will be advisable first to state the difference between discovery and invention, and the difference between pure and applied science. Discovery consists in finding out some new truth by means of study, experiment, and observation. Invention, in ingeniously applying some scientific fact or principle to human benefit. When Oersted first observed a magnetic needle move by means of a current of electricity he made a scientific discovery. But when Messrs. Wheatstone and Cooke applied Oersted's discovery in their telegraph at Paddington, they made an invention. Pure science, which often passes under the name of theoretical science, consists of those natural truths which exist altogether independently of their practical application; and applied science consists of such portions of pure science as have been adapted to useful purposes.

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* Communicated by the author.

All natural knowledge generally passes through three stages—viz., discovery, invention, and practical daily working. A scientific man discovers some new fact or principle in nature; an inventor applies it to some useful purpose; and a man of business brings the invention before the public, and continues it in daily use. We have not to deal here with *how* knowledge is to be discovered, or *how* it is to be applied, but simply to show, by a few illustrations, that the commercial, artistic and manufacturing success of this town is intimately dependent upon abstract scientific investigation; and as a further consequence, incidentally to prove that the general prosperity of the town would be greatly enhanced by contributing freely to the support of scientific institutions.

It is almost needless to say that, in many cases, without the discovery of a truth, that truth could not have been applied to benefit mankind; that, without the discovery of electricity, this force could not have been applied to useful purposes, and consequently we should not have experienced the blessings of the electric telegraph, nor the utilities of electro-plating.

Suppose that Gay-Lussac, in 1815, had not discovered cyanide of potassium, and that it had never been discovered, it is highly probable that the manufacturing returns of Birmingham would be much less in amount at the present time than they are, simply because there is no other known substance with which the electro-plating of base metals with gold and silver can be satisfactorily effected. Or suppose that sal-ammoniac, chloride of zinc, or other soldering agents, had not been discovered, the extensive and so-called "galvanising" process could not have been effected, because without those substances the iron articles immersed in the melted zinc, would not have received an *adhesive* metallic coating.

To illustrate the fact more fully: Suppose that the laws of mechanics upon which the action of all kinds of machinery is based were undiscovered; that the scientific facts and principles upon which the action of the steam-engine depends were unknown; that coal gas was undiscovered; that we are still without galvanic and magneto-electricity; that we were ignorant of the properties of those acids of which "pickling," "dipping," and "bronzing" liquids are composed, and that the chemical effects of light had never been discovered, what would be the consequence of all these omissions? Birmingham, without a knowledge of the laws of mechanics would have been nearly destitute of machinery; no rolling mills, tube mills, or wire mills; no metal lathes; no gas fitting or metallic bedstead manufactories; no steel pen or hook and eye making; no musket boring or rifling; no metal "toy" manufacture! Without a knowledge of the principles upon which the construction and action of that noble instrument the steam engine depends, we should have been without railways, and without any adequate mechanical power for our constant and multifarious requirements. Without coal-gas, our blow-pipes, and soldering apparatus would have been of but little service. Without the discovery of nickel we should have had no nickel refineries or german silver manufactories. Without galvanic and magneto-electricity, the extensive trade of electro-plating would never have sprung up, and the manufacture of galvanic batteries, telegraphic instruments, and especially of telegraph wire, would never have existed. Without a knowledge of the chemical properties of various substances we should never have had the immense chemical manufactories of acids, alkalies, phosphorus, and manures, of this district, and we should have been unable to produce the different colours and shades of colour upon gold, brass, and other metals; and without the discovery of the chemical effects of light we should never have possessed the manufacture of photographic chemicals and apparatus. Steam engines, railways, telegraphs, galvanic batteries, galvanised iron, photographic pictures, etc., having become commonplace facts of every-day life, we are apt to think that abstract science has had but little to do with their production, and we are led to undervalue the importance of scientific investigation.

It is true that many processes of manufacture have not been consequences of abstract scientific discovery—that they originally resulted from alterations made in the rudest artistic appliances, and that they have been directed and improved by the result of simple experience. For ages past we have been deriving the benefit of scientific principles without a knowledge of their existence. We have trodden in the beaten path of experience ignorant of the truth that we were acting in unison with fixed and certain laws. Numerous arts and processes were in extensive operation long before the principles involved in them were at all understood. The arts of enamelling and of iron smelting were known hundreds of years before we were acquainted with the principles of chemistry. In some instances the recorded results of daily experience in practical matters, tabulated and studied, have led to the discovery of scientific laws; but this is merely the making use of our ordinary experience for the advancement of knowledge, instead of making *special experiments* for the purpose.

It is also true that many discoveries remain a long time before they are practically and extensively applied, that some made long ago have not yet found a practical use, and persons of superficial minds frequently enquire, "What is their use?" *Their use is to assist in the development of other discoveries, and to be ready at the command of the inventor, who applies them to useful purposes.* Of what use were the various abstract investigations upon specific heat, latent heat, the tension of vapours, the properties of water, the mechanical effect of heat, etc., by Black and others, but to be ready for the illustrious Watt to apply in the steam engine? Of what use was the discovery of atmospheric electricity by Franklin, but to lead to the preservation of human life by means of lightning conductors? Upon the same rule, of what use are various subtle and delicate investigations upon magnetism, spectrum analysis and many other subjects now being made, but to assist in other investigations, and to be ready for similar useful applications? The application of the discovery of ordinary magnetism in the mariner's compass has for hundreds of years been annually saving the lives of thousands of mariners from shipwreck; and who is to say that its kindred discovery by Faraday—viz., diamagnetism, may not find a similar extensive application?

Many persons think that science is changeable and uncertain—that the discoveries of one generation are disproved by those of another, because they occasionally see scientific theories altered and superseded. But the real truth of the case is that the changes in the aspect of science which we continually witness do not result from *alterations* in our stock of positive knowledge, but from *additions* made to it. It is true that many theories have been invented and entertained for a while in the minds of scientific men, and have then passed away, but we must remember that these are only the scaffolding of truth, and no part of its real fabric. They consist of ideas which, whilst they assist us in understanding science, and in making discoveries, form no real part of our positive knowledge.

Other persons seem to think that the laws of matter are different in the laboratory from what they are in the workshop; that the principles which regulate a scientific experiment are different from those which govern a large manufacturing process; but this is a wrong idea. The laws of matter are universal; substances have the same properties in all places and in the hands of all men; water boils at the same temperature, whether it be in the retort of a chemist, the saucepan of a kitchenmaid, or the pan of a soap-boiler; a piece of iron is as readily deprived of its rust in a chemist's acid bottle as in a wire-drawer's pickling tub; a piece of phosphorus will as readily ignite in the hands of a chemist as in those of a match-maker; a galvanic battery yields the same quantity of electricity whether it be in hands of an experimentalist or in those of a working electro-plater.

It is true that many things which have appeared very promising in theory or in experiment have failed altogether in practice. But why is this? It is not that the principles of nature existed in the one case and did not exist in the other, but that we have imperfectly understood them; that from some unforseen circumstances we have been unable to apply them; or that we have indolently abandoned them without sufficient or proper trial. In many cases we are unable to obtain the same conditions of success upon the large scale that we have upon the small scale. If we melt some brass in a crucible and cover it with a layer of borax, and dip a piece of perfectly clean iron into it, the iron will receive an adhesive metallic coating; but if we attempt to coat very bulky articles, such as sheets of iron, by this process we fail, because no vessel will withstand the heat and great weight of the melted metal. In other cases a process fails because of its too great expense. Many attempts have been made to supersede steam as a motive power by means of electro-magnetism, and engines driven by that force have been constructed of five or ten horse power, but the cost of driving them has been found to be at least ten times the amount of that of a steam-engine of equal strength; and in other cases we fail because we attempt *at once* to carry out upon a large scale that which has only been the subject of limited experiment, instead of enlarging the process by small degrees, and adapting the apparatus, the materials, and the treatment to the size of the operation.

That which appears very simple in the hands of an experimentalist almost invariably becomes much more complex when carried into practice in a manufactory, simply because there is then a greater number of conditions to be fulfilled. Electro-plating a piece of steel with silver is to a chemist a very simple matter, because it is of no importance to him whether the silver adheres firmly, is of good colour, or is deposited at a certain cost; but with a *manufacturer* unless *all* these conditions are fulfilled, the process is a failure. We should not condemn theoretical science because we are not able, even with fair and persevering trial, to apply it to any useful purpose, but *wait patiently* until circumstances ripen for its application. Many inventions which are inapplicable in one state of knowledge become applicable by the progress of science and art. The idea of an electric telegraph, first attempted by the aid of frictional electricity, had to wait the development of the galvanic battery and the discovery of electro-magnetism before it could be successfully applied.

It is to the labours of scientific men, and the services of those institutions which foster them, that we are in a great measure indebted for our every-day necessaries and comforts of life; every man who eats his food with an electro-plated fork is indebted for the use of that very article to the labours of those scientific investigators who developed the principles of the steam-engine, because it is by the aid of that instrument the metal for the forks is rolled into sheets, and stamped into blanks, previous to plating; he is also indebted to Volta, Davy, and others, who developed the galvanic battery; to Gay-Lussac, who discovered cyanide of potassium; and to the various inventors and practical men who applied all those means to produce the final result. Every man who has sent or received a message by the electric telegraph is indebted to the philosopher Oersted, who, after six years of investigation to ascertain the relation of electricity to magnetism, discovered in the year 1819 that if a current of electricity passed near a magnetic needle and parallel to it, the needle moved either to the right hand or to the left, according to the direction of the current; also, that if a current of electricity was made to pass through a copper wire, coiled upon a bar of soft iron, that piece of iron became a magnet as long as the current circulated, and ceased to be magnetic when the current was stopped. Without these and other discoveries, electric telegraphs could not have existed. Every manufacturer in Birmingham is indebted for gas-light to the discoverer of coal-gas, and to the various inventors who applied that material to lighting. And we are all of us indebted for our coals not only to Newcomen and Watt, who invented the steam-engine for coal pits, but also to the various scientific discoverers who preceded them, and investigated the properties of water and the mechanical effect of heat. Watt himself, in the narrative of his invention of the steam-engine, termed "A Plain Story," acknowledges this truth, and says that "from his friend Dr. Black he learned what was the heat absorbed and rendered latent by the conversion of water into steam," and that "experiments had been made long before by Dr. Cullen, Mr. Robison, and others, in public classes, which proved that water, when placed in an exhausted receiver, boiled, and was converted into steam, at the heat of 70° or 80° Fahrenheit's thermometer, while it was well known that under the pressure of the atmosphere it required 212° of heat to make it boil;" and, further on, he again says: "Thus the latent heat of steam was discovered and published by Dr. Black; the boiling of water *in vacuo* at low degrees of heat, was discovered and published by Dr. Cullen, Mr. Robison, and several others."

No town has, perhaps, benefited more by scientific discovery and its application to trades than Birmingham. The great bulk of the articles manufactured here being composed of metal, are produced and ornamented by mechanical and chemical processes, and, therefore, offer peculiar advantages for the application of mechanical and chemical knowledge. And if we refer to the history of Birmingham, we find a long succession of inventions made by employers and their workmen; and in the list of patents the word "Birmingham" is particularly conspicuous.

Many manufacturers seem to think that because their operations are so completely routine, and have been handed down to them by their predecessors in nearly their present state, they are not at all indebted to science; but there is no manufacture, especially amongst metals, which does not continually involve scientific knowledge.

It would be invidious to speak of Birmingham men now existing who have accumulated wealth by applying science to trade, although the instances are not few or unimportant. We will, therefore, limit ourselves to a few remarks respecting that greatest of useful men, James Watt, the inventor of the steam-engine. He was born at Greenock, in 1738; his father was a poor man, and Watt himself was a poor person, a working mathematical instrument maker. He was industrious at his trade, and occupied his spare time in studying science, and in endeavouring to apply it to useful purposes. His industry, ability, and high moral character gained him the acquaintance and confidence of men of superior station in society, some of whom assisted him with money to carry on his experiments. It was by these means he became the partner of the late Mr. Matthew Boulton, of the Soho Works. From the year 1774, when they became partners, until his death in 1819, Watt was continually applying science to manufacturing purposes, and by this means accumulated not only a handsome fortune and purchased two estates—one at Handsworth and another in Wales—but what was of far greater importance, he gained the reverence and affection of his fellow-creatures, by his superior moral and amiable conduct, and gloriously transmitted his name to posterity by his useful inventions.

Not only has science benefited the manufacturers, but also the operatives of this town, because the extension of science to manufacturing purposes has compelled them to make themselves acquainted with intellectual subjects. Instead of remaining mere machines, mechanically performing the work set before them, they are obliged to exercise the faculties of observation and judgment in watching the results and directing the action of mechanical, physical, and chemical powers. Instead of following the blind path of experience, using unknown forces to accomplish some definite result, they pursue their labours with the aid of known and certain laws. It is true that in many cases artisans who have acquired a little knowledge of science have thereby been rendered conceited and unfit for their special employment, and this has made many manufacturers object to technical scientific education for their servants; but this would not be so much the case if scientific knowledge were more generally and equally diffused.

No man has more occasion to bless the introduction of the steam-engine, machinery, the galvanic battery, and science in general, than the working mechanic, because it has mitigated his physical toil by giving him the duty of simply directing the labour instead of actually performing it; whilst it has deprived him of one kind of employment, it has provided him with something better. But a few years ago, the operatives in the silver-plating trade had to lay the silver on the articles with their hands, with the aid of a soldering iron; *now* they have simply to set their batteries in action, and watch the electricity doing it for them. In a similar manner, the working engineer at his metal-turning lathe has merely to direct the action of his tools, whilst the steam-engine performs the heavy labour of turning.

In the present period of scientific progress, when the attention of men of business is so frequently attracted to some new invention or discovery, which appears likely, if not to supersede their particular occupation, at least to have some influence upon it, it is the interest of every such person to watch the progress of science, and to seize it for his own advantage, instead of allowing others to do so, and thereby divert his trade into other channels. It is probably, in part, a result of our comparative neglect of science, that continental nations are just now treading upon our heels in the race of manufacturing progress.

No art or manufacture is so perfect as to be exempt from the influence of discovery and invention, and no man can produce so perfect an article but that, by the aid of science, a better may be produced.

We must here state our conviction that science and trade are mutually dependent, that without the assisanee of science trade would be unable to supply our daily increasing wants, and that without the pecuniary support of trade, science would languish and decay.

"As long as arts and manufactures are left to be directed and improved by simple experience, their progress is extremely slow, but directly scientific knowledge is successfully applied to them, they bound forward with astonishing speed." Look at the art of taking portraits: for hundreds of years it remained in the hands of oil and water-colour painters without any very great progress; but directly science was applied to it, in the form of photography, its progress became amazing. Fifty years ago, photography was unknown, but immediately Messrs. Daguerre and Talbot, in 1841, made known their processes, the art began to advance, and so rapid has been its progress, that at the present time many thousand persons are employed in its exercise, and millions of portraits have been taken with an accuracy and at a cost quite beyond the reach of the old method.

No art is probably more antique, or remained longer exempt from the magic touch of science than that of match-making and obtaining a light. Every adult person can certainly remember the primitive and old-fashioned tinder-box, which had passed, with its flint and steel, from one generation to another without any material improvement. Phosphorus, it is true, was discovered as early as the year 1669, but it was not applied to match-making till about 1833. Since then the progress of invention has been so rapid that there are now numerous manufactories which produce many millions per day of phosphorus matches; for instance, those of M. Pollak, at Vienna, and of M. Fürth, of Bohemia, consume together about twenty tons of phosphorus annually, and give employment to about 6,000 persons; and as one pound of phosphorus suffices for about one million German matches (or 600,000 English ones), those two makers alone produce the astonishing number of 44,800 millions of matches yearly.

In what consists the great success of applying science to trade? Simply the influence of demonstrable truth. We know that if we have once discovered all the laws or conditions of some improved process or result in a manufacture, the reproduction of exactly the same conditions will hereafter enable us to invariably produce the same result. In this respect science differs from empiricism, for in empirically working a process we are ignorant of the conditions or laws which are operating, whilst with a scientific knowledge we understand those laws, and can direct them to our particular purposes. In the process of electro-plating we understand the laws of the phenomena, and can direct them so as to obtain silver of a hard or soft quality, brittle or tough, crystalline silver, etc., according to our pleasure; but if we had only an empirical knowledge of the subject we could not thus vary the process.

The highest test of truth is successful prediction; if we calculate beforehand that an eclipse of the sun will occur at a certain hour and minute, and that eclipse occurs accurately at the predicted moment, we may rest assured that our knowledge upon that point is positive and true. If we say that a piece of clean iron, immersed in a solution of blue vitriol, will become covered with a layer of metallic copper, and we find upon trial that this result invariably occurs when we fulfil those conditions, we may be certain that our knowledge of this phenomenon and its conditions is of a positive and certain character.

True science, then, consists of such knowledge as this: of faithful statements of natural phenomena. And as the laws which regulate those phenomena are invariable, and are uninfluenced by the mind of the observer, the statements and predictions of real science possess the same quality, and may be relied upon in the highest degree by all men.

The development of this kind of knowledge is comparatively slow, because it requires an immense amount of accurate investigation; but it is certain; and, as far as it goes, it makes permanent inroads upon the domain of man's mere opinions, and effectually displaces his superstitious.

A true knowledge of science tends to remove differences of opinion between man and man, because it enables every honest examiner to obtain essentially similar results. Science commands all its disciples to acquire positive knowledge, *i.e.*, to prove for themselves all they learn, or to ascertain that it has already been proved; and as the laws of nature are unchangeable, the evident result of this is, that as far as real scientific knowledge is concerned, all scientific men have the same beliefs. This uniformity of belief does not extend to scientific *hypotheses* or *theories*, because, as we have before said, they are only the scaffolding of truth, and no part of its real fabric. It is the glory of scientific men that their common object of search is truth, and that true science is free from party disputes.

A scientific man must not, on the one hand, accept orthodox views simply because they are offered to him with the sanction of great names; nor, on the other hand, adopt heterodox opinions because they are novel, or agree with his own preconceived notions. He must adopt neither, except upon the condition that they have been satisfactorily proved. He must be, in an abstract sense, a man of one idea, and that idea must be—truth. Although every man must, in the present state of things, be guided by simple experience in the great bulk of his actions, yet no man can lay just claim to a scientific character so far as he adopts opinions without proof.

Real science is altogether independent of faith. Whether we believe or not that a piece of clean iron immersed in a warm mixture of oil of vitriol and water evolves hydrogen gas, the fact itself remains unaltered. Man, chiefly the servant, but hoping to become more the master, of nature, cannot, either by an effort of faith or will, destroy truth. The laws of nature are immutable, and he must, in order to become their director, first become their obedient disciple. If he wishes to make an improvement in manufactures, he must first study the sciences relating thereto.

By a great necessity of our nature, we are compelled to wade through error in our progress towards truth. We must work empirically until we can direct scientifically; "and science, recognising this fact, constantly endeavours to improve her knowledge. Whilst it is the pride of ignorance to obstinately adhere to routine ideas and modes of operation, whether according to reason or not, it is the glory of science to admit its defects, and to receive and adopt every improvement."

Notwithstanding the large amount of error and ignorance still existing, science is progressing with irresistible power, and scientific investigation, like every other species of useful activity, is rapidly breaking down the barriers between the various nations of the earth, and infusing common interests amongst all mankind. Nothing is uniting the sympathies of different nations, and increasing the commerce between them, more than the increasing facilities of communication brought about in a great measure by the developments of science and art. We allude more particularly to ocean steam navigation, rapid postal communication, and the ocean telegraph.

The age of the "rule of thumb," simply as such, in relation to matters dependent upon physical and chemical science, is fast passing away; such a rule is good, but it is still better when directed by a knowledge of the principles of science.

So far has scientific discovery, and its practical application to human benefit by invention, now progressed, that every one considers this to be, *par excellence*, the scientific age. And as discovery and invention continue to progress with accelerated speed, we are encouraged to hope that scientific principles will ultimately be universally recognised as the regulators of manufacturing industry.

ON POISONING BY COLOCYNTH.

BY CHARLES MEYMOTT TIDY, M.B.,

Joint Lecturer on Chemistry at the London Hospital.[*]

A YOUNG married woman who had all her life enjoyed fair health, was suffering from a slight cold, and had passed nearly a fortnight over her usual monthly period. Talking with her landlady and another friend, she asked them what was a good thing to take, upon which her friend remarked she had heard bitter apple recommended. This was on the afternoon of the 5th of November. She then took threepence out of her pocket, and asked her friend to purchase some for her, which she did, at a neighbouring chemist's. She brought it home and gave it to her. When she took the drug it is impossible to say, as there was no evidence on this point. The following day, however, she was seized with vomiting and violent purging, which never ceased until her death, which occurred on the afternoon of the 7th of November.

Some days after death Dr. Godfrey made an examination of the body. He reports that the viscera was healthy; the right side of the heart was full, the left, empty. The brain and intestines were not examined.

On the 17th of November I received the uterus, and the stomach with its contents. The uterus was unimpregnated and healthy, though at the same time I should state it was a little more congested than usual. There was no appearance of any inflammation in the stomach; indeed it was somewhat preternaturally pale. It contained about sixteen ounces of a light yellow fluid, which smelt of digesting matter, and had an acid reaction. I allowed the sediment to collect, and examined it under the microscope, but failed to discover any substance having the structure of the bitter apple. I endeavoured then to see if I could detect the presence of the bitter principle by extraction with alcohol, but was again unsuccessful. I did not discover any poison in the contents.

Colocynth is imported in the form of a dried fruit, about the size of an orange; but is usually sold by the chemists as a powder, having a yellowish-white colour. There was some difficulty in determining the quantity that was actually procured for threepence; but after purchasing it at various chemists, I find somewhere between two and three drachms is usually sold for that sum. It is right, however, to state that at the inquest the chemist who is said to have sold it asserted that he never gave more than a drachm for threepence.

I now made a careful investigation into the effects of the poison on the lower animals. The first thing, however, was to find out the smallest quantity of the powdered colocynth that could be detected in organic liquids, and I found that one grain was easily discoverable in ten ounces of fluid. Two drachms of the powdered colocynth given to a small dog produced considerable vomiting and purging; but the animal soon recovered, and in two days was as well as ever. Three drachms and a half was, I found, the smallest quantity that will prove fatal to a dog, in one case in eighteen hours, in another twenty-two, in a third thirty-six hours, and even this quantity occasionally fails to kill. In one case a dog recovered after taking six drachms. The following were the results obtained:—

Experiment	1.	Gave a dog	1 ounce ...	Died in 5 hours.
,,	2.	,,	6 drachms ...	,, 8 ,,
,,	3.	,,	ditto ...	,, 9 ,,
,,	4.	,,	ditto ...	Recovered.
,,	5.	,,	3½ drachms...	Died in 18 hours.
,,	6.	,,	ditto ...	,, 22 ,,
,,	7.	,,	ditto ...	Recovered.
,,	8.	,,	ditto ...	Died in 36 ,,
,,	9.	,,	3 drachms ...	Recovered.
,,	10.	,,	ditto ...	ditto.
,,	11.	,,	ditto ...	ditto.
,,	12.	,,	2½ drachms...	ditto.
,,	13.	,,	ditto ...	ditto.

These experiments closely agree with the cases on record. Orfila relates the case of a man who took three ounces of the powdered colocynth for a gonorrhœa, and recovered. Christison relates a case of a woman who died in twenty-four hours, after swallowing a teaspoonful and a half. Now, in my experiments, where death occurred before twenty hours after taking the poison, the colocynth was easily detected, both chemically and by the microscope; but I failed to discover the drug in those cases that proved fatal after a longer period. Generalizing upon these facts, we cannot help noticing the uncertain action of colocynth as a poison. It is, of course, nothing very strange that large doses of a poison should fail to kill where small doses succeed. In the case of this woman, allowing that colocynth was the cause of death, the dose probably did not exceed three drachms; and, according to the chemist who sold it, only one drachm, the smallest quantity I believe on record that has produced a fatal result.

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[*] Contributed to the *Lancet*, Feb. 1.

The symptoms in animals as a rule come on after some short time; somewhere between one and three hours, varying with the dose given. Vomiting generally occurs first, and diarrhœa follows rapidly upon it. There is evidently in most cases severe pain, like colic, the pupils are in all cases contracted, a considerable quantity of blood is passed, and I was able in all cases to detect colocynth in the evacuations. Occasionally I noticed giddiness and extreme languor, but in no case anything like convulsions.

The post-mortem appearances are variable in the extreme. As a rule, the stomach and intestinal canal are highly congested, large ulcers being occasionally met with in the stomach. In some cases, however, the appearances were quite the reverse of this, the stomach and intestines being paler than usual, with this exception, that in every case the rectum was violently inflamed. The other viscera as a rule were healthy, though occasionally I found traces of inflammation in the kidneys and bladder.

Once again returning to the case that led me to make these experiments, and has suggested these remarks. From all accounts, she could not have died within forty hours after taking the colocynth. I do not regard, therefore, failing to find the poison as a proof, that death did not result from it, although, of course, failing to find it, I was unable at the inquest to speak positively one way or the other. The vomiting and violent purging, the bloody stools noticed by Dr. Godfrey, the pale stomach which I have already referred to as not unusual, the previous good health of the woman, and the certain evidence that the drug had been bought, and she herself ascribing her illness to having taken it, are facts which to my mind leave no question as to the immediate cause of death.

SILVERING GLASS MIRRORS.

The chemical process of silvering mirrors, devised by Prof. Henry Draper of New York, and noticed in a recent number of the *Scientific American*, includes five operations, viz., the cleaning of the glass, the preparation of the silvering solution, the warming of the glass, the process of silvering, and the polishing. The description is for a 15½ inch mirror.

1. Rub the glass plate thoroughly with aquafortis, and then wash it with plenty of water, and set it on edge on filtering paper to dry; then cover it with a mixture of alcohol and prepared chalk and rub it in succession with cotton flannel.

2. Dissolve 560 grains of Rochelle salt (sodio-potassic tartrate) in 2 or 3 ounces of water and filter; dissolve 800 grains of nitrate of silver in 4 ounces of water. Take an ounce of strong ammonia of commerce and add nitrate solution to it until a brown precipitate remains undissolved. Then add more ammonia and again nitrate of silver solution. This alternate addition is to be carefully continued until the silver solution is exhausted, when some of the brown precipitate should remain in suspension. Filter. Just before using, mix the Rochelle salt, and add water enough to make 22 ounces. The vessel in which the silvering is to be performed should be a circular dish of ordinary tin plate, and coated with a mixture of equal parts of beeswax and rosin. At opposite ends of one diameter two narrow pieces of wood are cemented to keep the face of the mirror from the bottom of the vessel.

3. The glass is slightly warmed by putting it in a tub or other suitable vessel, and pouring in tepid water: o cover the glass; then hot water is gradually stirred in.

4. Carry the glass in the silvering vessel, into which the silvering solution has been poured, place the whole apparatus before the window and keep up a slow rocking motion. Leave the mirror twenty minutes in the liquid or half an hour, and wash with plenty of water.

5. When the mirror is perfectly dry, take a piece of the softest buckskin, stuff it with cotton, and go gently over the whole silver surface to condense the silver. You may use some of the finest rouge. The best stroke is a motion in small circles; rub an hour. The thickness of the silver thus obtained is about $\frac{1}{200000}$ of an inch.

Homœopathy.

OPIUM IN HOMŒOPATHIC PRACTICE.

The following extract from a series of articles, entitled "Impressions and Facts drawn from Ten Years' Homœopathic Practice," contributed by Dr. Bayes, of Bath, to the *Monthly Homœopathic Review*, will be read with interest, even by those who reject the dogmas of Hahnemann:—

"There is no single drug in the Materia Medica whose range of action is so fully known as *opium*. From narcotism at one end of the chain to its action as an energizer at the other, it leads us from allopathy and antipathy to homœopathy, and shows how these opposite methods may each co-ordinate in the preservation of human life and in the relief of human suffering. The essayist who should take *opium* for his theme, if he followed out the whole facts which have been collected by both schools of medicine, and if he carefully collated and compared them, would be forced to concede that this drug has its uses and advantages in each of the several methods of its administration.

"Hahnemann's first proposition of the *Organon* may be prophetically true, and applicable to medical science when it has attained perfection; but in our present state of grievous imperfection, we must qualify his assertion that 'the physician's high and only mission is to restore the sick to health, to cure, as it is termed,'* by adding the words, 'and to palliate human suffering.'

"It is true that cure, as long as it is possible, should at all times occupy the most prominent place in the mind of the physician; yet he ought not to overlook palliation, whenever it can be used without prejudice to the rapidity or the solidity of the cure; and when cure becomes impossible, as is the case in too many diseases, then palliation comes to the front, and should occupy the sole efforts of the physician. When the only path before the afflicted patient leads from time to eternity, it then becomes the physician's 'high and only mission' to remove as many thorns and to scatter as many roses as possible in the weary road which the patient must tread.

"So long as it is possible to gain an offing, it is the manifest duty of a captain to attempt to so save his vessel; but when it is no longer possible to save her from wreck, it may be equally his duty to steer her in shore, and to straud her in such a position and manner as give promise of insuring the least damage to the ship, her cargo, and crew.

"Again, there are some diseases where pain is so prominent a symptom, and so terrible from its violence, as to be in itself a source of great danger to life. There are other diseases which are, in certain stages, wholly incurable, and in which there are severe and agonizing pains. In such cases the administration of *opium* or its salts is not only admissible, but becomes a clear duty. I may give as familiar examples of the former, the passage of gall-stones or of calculus from the kidney to the bladder. In both these cases I have found *calcarea carb.* 30 give full relief, when conjoined with the hot bath; still, if I found these means disappoint me, I should not hesitate to give a full dose of *opium* or *laudanum*. It would be inhuman to permit the long continuance of such acute suffering, when the means of relief were ready at hand.

"Why, then, not give *opium* at once? an allopath will say. Because, if I can give relief by the simpler means, I avoid the injurious after-effects of *opium*, and my patient is sooner a sound man.

"Why give *opium* at all? says the high-dilutionist.

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* *Organon of Medicine*, Proposition I.

Because, if my homœopathic remedy failed me, I could not permit my patient to remain longer in an agony which might produce such exhaustion as to end in a prolonged illness.

"My experience has been limited to but few cases of these painful diseases; but hitherto I have had reason to speak very favourably of the simpler means above adverted to, and therefore I have not been compelled to resort to opiates in them.

"As an example of the painful incurable diseases where *opium* or *morphia* should be given, I may name the ulcerative stages of cancer of the uterus. I have seen two such cases where no relief was given save by stimulants and narcotics.

"The first of these cases occurred in my Cambridge practice. I was called to see a patient about thirty miles distant, whom I found in a very advanced stage of this terrible disease, the wall between the vagina and rectum having been destroyed by ulceration. Nothing, of course, could be done to cure such a case; I therefore left her in the very kind and skilful hands of her former medical adviser, and by opiates and sedatives the few remaining months of her painful life were rendered as tolerable as possible.

"The second was a very instructive case. A lady of more than middle age had suffered from what was assumed to to be severe sciatica of the right side. She had consulted nine physicians, some of them men of eminence, in Dublin and other parts of Ireland. She had, at last, been advised to come to Bath and try the effect of the waters. Under the advice of a physician of good standing here, she took a course of hot mineral baths, continuing the hypodermic injection of *morphia*, from which she had for some months received her only ease. At last, all other means having failed, her husband determined to try the effects of homœopathy. Distrustful of physicians, he wrote to me, asking whether I had ever cured similar cases, as unless I could promise a fair prospect of cure, he did not feel inclined to make any further experiments with physicians.

"I replied that I could give no opinion until I had seen the case. To this he replied that all the physicians whom he had previously consulted had made such a promise before seeing the patient. To this I answered that, as none of the physicians had performed their promise, I was the less prepared to depart from my own professional rule, *i.e.*, to make no kind of promise till I had seen and fully diagnosed the case. The result was I saw the patient, whose aspect at once showed me she was the subject of cachexia of some kind. An examination of the parts showed me that it was not a case of sciatica; and a further examination enabled me to diagnose cancerous disease of the uterus, already in a state of extensive ulceration. Hence I was not only unable to promise a cure, but prognosed the case as beyond cure, and capable only of palliative treatment. An opinion so opposed to all that had previously been given demanded further consultation; and I sent the case to Dr. Priestley, whose view coincided with my own, and he advised immediate removal home. A few months after, the predicted fatal result followed. The patient's only relief was from hypodermic injections of *morphia;* at first these gave twelve hours' ease, but when I heard last they were obliged to be repeated every six hours. Before she left Bath I gave her (hypodermically), on one occasion, *atropine* in place of *morphia;* but it produced such severe symptoms of *belladonna* poisoning that it was not repeated. Her pupils dilated; she had a bounding, high pulse, a scarlet skin and sore throat, and great restlessness, etc. The injection of *morphine* removed these symptoms.

"Having thus given willing testimony to the allopathic uses of *opium*, I would give a few words of warning against its abuses.

"Pains caused by inflammations are far better removed by their appropriate homœopathic remedies. I cannot too strongly deprecate the use of *opium* in deadening the pains of rheumatic fever, of pleurisy, of pneumonia, and some other acute diseases. It is a slovenly and bungling way of alleviation, and one which places the patient's life in danger from two sources—the pain being numbed, the physician may be deceived as to the course and severity of the disease; and the nerves of the part being partially paralysed by the remedy, curative processes are partially or wholly arrested, to the ultimate prolongation of the disease and to the injury of the patient.

"From my experience of the homœopathic treatment of these cases, I should say, very decidedly, that not only do such patients recover far more rapidly under the homœopathic treatment, but that their sufferings are positively less, than are those of the patients who, in similar diseases, are treated allopathically with opiates and sedatives.

"Living in my early years in the aguish district of Norfolk, on the borders of Lincolnshire, I then saw a great deal of the opium-eating and laudanum-drinking which is still carried on by the inhabitants of that part of England. The chemists in those districts sell immense quantities of *opium*, in its crude state, every market day, rolled into little sticks, in pennyworths and two-pennyworths. I have seen fen-farmers who were in the habit of buying *laudanum* by the half-pint, or even more, on every visit to their market town. The habit is first commenced to allay the feeling of extreme lowness of spirits and bodily depression which affects the ague stricken where the intermittent is imperfectly developed, or where the patient suffers from the form of cachexia called dumb ague. The habitual opium-eaters become prematurely aged looking, but, so far as I can ascertain, live to a good old age, and though yellow-looking miserable mortals, do not suffer from other ailments beyond their chronic ill health.

"Another disease in which large doses of *opium* are frequently given is delirium tremens. Since I have practised homœopathy, I have had but little opportunity of treating cases of delirium tremens. In this disease, *opium* was long looked upon as the true specific; and larger and larger doses were given to compel the sleep which, when induced, terminates this frightful disease, and saves the patient's life. It is stated in some of our books also as specific to delirium tremens. My own experience does not confirm this, but I confess it to be limited. I have given *opium* in all doses, from 30th to strong tincture, without good result in this disease. Truly, if it is continued long enough, the patient falls asleep at last; but it is by no means clear that the medicine has effected the cure. *Belladonna, hyoscyamus,* but especially *aconite,* appear to me to be more worthy a trial in this disease; in some cases, too, *cannabis indica.*. When *opium* is given for the cure of delirium tremens, I do not think it should be used homœopathically, but antipathically, and in large doses.

In cases of chronic constipation, *opium* 3 and 6 have proved useful in my hands, when there was want of sensibility in the abdominal condition, and little or no inconvenience felt from the want of action.

"In cases of heaviness in the head, with great somnolence after meals, in patients predisposed to apoplexy, particularly if there is contraction of the pupils present, and a want of expansion of the pupils in the dark or shade, I have found *opium* very rapidly useful, given in 3rd decimal to 6th dilutions, according to the sensitiveness of the patient.

"Now and then we meet with patients whose general condition may be characterised as one of torpidity; inactivity is the characteristic of their whole condition, mental and bodily. Where this cannot be clearly traced to any disease requiring other special treatment, *opium* 3 to 6 seems to act as a general energizer, and to set the wheels of life in action once more, placing the patient in a condition to benefit by other medicines which hitherto had failed to act in his case.

"In apoplectic conditions *opium* is invaluable.

"Slow, full pulse, with snoring during expiration, are sure indications for *opium* in small doses (the 3rd or 6th dilution).

"Headache with drowsiness and throbbing of the arteries, with red face and contracted pupils, require the same treatment.

"In typhus fever, where partial suppression of urine has been present with somnolence, I have found *opium* 3 and 6 very useful, intercurrently with other medicines.

"Having myself witnessed more than one case of poisoning by *opium*, I have been the more forcibly impressed by its well-marked homœopathic action in those cases which idiopathically present similar symptoms."

At an inquest held in the Minories last week relative to the death of a child six weeks old, it transpired that a chemist who had been called in, gave a certificate of death, contrary to the Act of Parliament. The jury returned a verdict of "death from debility from natural causes," and do not appear to have thought it necessary to censure the chemist.

Photography.

PHOTOGRAPHIC CHEMICALS: THEIR IMPURITIES AND MODE OF DETECTION.

BY J. SPILLER, F.C.S.*

Within the short space allotted to this notice, it is contemplated only to take account of the more important impurities likely to occur in the chief chemical re-agents employed by photographers. So far as the analytical instructions extend, it is hoped that the information will prove serviceable; but the list of chemicals is acknowledged to be incomplete.

Nitric acid is prepared of three degrees of concentration: the strongest acid, of sp. gr. 1·50, is useful in the preparation of highly explosive (insoluble) gun-cotton; but a second quality, of sp. gr. 1·42, furnishes the best collodion cotton; the third may be readily obtained in a state of purity, and, therefore, is best adapted for dissolving silver and for chemical purposes generally; its sp. gr. is 1·36. Chlorine is detected by its showing a milkiness, or, if very impure, giving a curdy white precipitate with nitrate of silver. To test for sulphuric acid or sulphates, evaporate half an ounce of the nitric acid nearly to dryness in a porcelain dish; add distilled water and chloride of barium; when much sulphate is present, the original nitric acid, diluted with twice its bulk of water, will show immediately a white precipitate with the barium salt.

Acetic acid should be free from sulphates and chlorides, and also from empyreumatic substances indicated by their colour and odour, and by their power of reducing ammonio-nitrate of silver when gently heated in a test-tube.

Sulphuric acid.—The superior quality of commercial oil of vitriol, known as "sulphur acid," sp. gr. 1·84, is always pure enough to meet the requirements of the photographer.

Alcohol and *ether* should evaporate without residue, and refuse to show any acid reaction with blue litmus paper. The hydrometer indication will show the proportion of water existing in any sample by reference to the tables of Sykes or Ure. Pure absolute alcohol, at 60° Fahrenheit, has the gravity ·825; pure ether at the same temperature, ·723. Aldehyde, acetone, and methylic compounds may be discovered by mixing with a little nitrate of silver, and noting any metallic reduction on exposure to sunlight; or, better, by heating with ammonio-nitrate of silver, to get a lustrous mirror.

Nitrate of silver should be neutral to test-papers and quite colourless. Tested for impurities by dissolving twenty grains in pure water, adding hydrochloric acid in slight excess to precipitate the silver, filtering the supernatant liquid, and evaporating the clear acid solution to dryness in a porcelain capsule. If any appreciable amount of residue is left, the existence of alkaline nitrates in the sample is probable, and these should be specially tested for: soda being indicated by a strong yellow tinge imparted to the blowpipe flame; potash by a violet flame and yellow crystalline precipitate with bichloride of platinum.

Chloride of gold may contain an excess of hydrochloric acid or of moisture. The best plan of examining this salt for chlorides of sodium and potassium consists in reducing the gold to the metallic state (which can be weighed) by boiling the aqueous solution of a known quantity with pure oxalic acid, and evaporating the colourless supernatant liquid to dryness. After heating the residue to drive off the excess of oxalic acid employed, the existence of alkalies may be proved as in the previous instance.

Sulphate of iron should be in the form of pale-green crystals, free from superficial peroxidation, and perfectly soluble in cold water. The double sulphate of iron and ammonium may be distinguished from the simple salt by its giving off ammonia gas on heating with slaked lime or a caustic alkali.

Hyposulphite of soda should be perfectly soluble in water, forming an inodorous neutral solution, not containing any appreciable amount of sulphate.

Cyanide of potassium usually contains a considerable quantity of carbonate of potash in admixture. The existence of this impurity and the proportion may be judged of by comparing the amount of precipitate furnished by chloride of barium. Pure cyanide of potassium may be had in crystals, or in fused cakes, which are semi-translucent, and have almost a saccharine fracture. Samples which are quite opaque will, however, serve as a fixing agent, but their power of dissolving iodide and bromide of silver will, of course, be exerted in an inferior degree.

Iodide of potassium should be in the form of well-defined cubical crystals, colourless, and, like the last, be free from carbonate of potash.

Carbonate and *bicarbonate of soda* often contain much sulphate, and sometimes, also, chlorides. These impurities may be detected by adding to the aqueous solution of the crystals pure nitric acid until effervescence has ceased; then testing one portion for sulphates with chloride of barium, and the other for chlorides with nitrate of silver.

Pyrogallic acid should, if free from empyreumatic substances, have and preserve for a long time its pearly white colour. The purity of this article may be inferred by its leaving no residue when heated upon platinum foil; a test to which citric, tartaric, and other organic acids may also be subjected.

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* Contributed to the *Year-Book of Photography.*

ALBUMEN OPALOTYPES.

Our contemporary the *Photographic News* publishes the following formula by Mr. William Bell, photographer to the Army Medical Museum at Washington:—

Albumen for Pictures on Plain Opal Glass and Fine Negatives.

No. 1.—	Albumen	6 ounces
	Concentrated ammonia... ...	1 drachm.

Albumen for Pictures on Ground Opal Glass and Strong Negatives.

No. 2.—	Albumen	6 ounces
	Chloride of ammonia	6 grains
	No. 1 solution of oxide of silver...	½ drachm.

Solution of Oxide of Silver.—No. 1.

Ammonia	1 ounce
Oxide of silver...	40 grains.

Put the ammonia and oxide in a strong vessel, stir well, and add nitric acid until the solution is slightly milky, *but not acid.* Filter, and it is ready for use in albumen No. 2.

Silver Solution.—No. 2.

Oxide of silver	240 grains
Concentrated ammonia	4 ounces.

Put the ammonia and the oxide of silver in a strong vessel. Stir well, and add nitric acid, C. P., until the solution is *decidedly acid.* Now add 12 ounces of alcohol; filter.

Silver Solution.—No. 3.

Nitrate of silver	70 grains
Distilled water	1 ounce
Alcohol	16 ounces

Dissolve the silver in the water, add ammonia until the precipitate first formed is just re-dissolved; pour out one-half into a bottle, and to the other half add nitric acid until it is just slightly acid; mix the two together, and add the sixteen ounces of alcohol; filter.

Toning Bath.

Acetate of soda	36 grains
Chloride of calcium	36 ,,
Chloride of gold	1 grain
Water	12 ounces.

Fixing Bath.

Hyposulphite of soda	1 ounce
Water	16 ounces
Alcohol	3 ,,

Beat separately No. 1 and No. 2 albumen to a stiff froth; take the settled solution and coat the opal-glass while wet, and stand to dry at this angle ⟍, albumen side downwards. Dry without heat, and, as the plates keep well, a large quantity can be coated at one time, and, when dry, stored away in a dry place. Take the prepared plate, and dip it into silver solution No. 2 for one minute, then wash it with water until the water flows smoothly from it, drain well, and flow it two or three times with silver solution No. 3, and dry; when dry (if properly done), the surface will be free from any crystallization, and very bright and clear. Print deep. After printing, take the plate and flow it with alcohol, wash off the alcohol with water, tone, fix for three minutes, and wash for one hour. Caution! never take the plate out of the hypo, and plunge it into, or wash it with, a heavy stream of water, but let the water flow gently into the fixing bath. After a little while it then can be washed in a good stream of water. This mode of washing will prevent bubbles forming under the film and the spoiling of the picture. Be sure and have the place where the plates are coated with the albumen perfectly clean. Dust spots create the trouble most met with.

Corner for Students.

The chemical formulæ employed in this section are based upon the new system of atomic weights, unless the use of the older system is specially indicated. In the *British Pharmacopœia* the symbols corresponding to those adopted here are printed in heavy Clarendon type.

QUESTIONS.

Preparation of Oxygen.—The weight of 11·2 litres of oxygen gas at 0° C. (32° F.) under the standard atmospheric pressure is 16 grammes. A quantity of oxygen, which will exactly measure 100 litres under the same conditions of temperature and pressure is required. How much potassic chlorate, $KClO_3$. must be decomposed for its production, assuming that all the oxygen can be expelled from the salt? The weight must be expressed in grammes, and all calculations carried out to three decimal places.

Argenti Oxidum, *B. P.*—1. Represent by an equation with the modern symbols, the chemical reaction which takes place in the officinal process for preparing oxide of silver.

2. Give the weight of oxide (in grains) obtainable from the quantity of nitrate of silver prescribed in the *B. P.* form.

Hydrargyri Iodidum viride, *B. P.*—How many grains of iodine are required to convert 1,000 grains of quicksilver into this compound?—*J. Y.*

Sodæ Bicarbonas, *B. P.*—Why is *dried* sodic carbonate employed together with the ordinary crystallised carbonate in the preparation of this salt?

Acid Sulphuricum dil. *B. P.*—The volumetric test for this preparation in the Pharmacopœia of 1867 is stated to indicate 10·14 per cent. of anhydrous sulphuric acid. This statement may be easily proved to be erroneous. Give the true percentage of SO_3 in the diluted acid.

Preparation of Nitric Acid.—On a small scale nitric acid is usually obtained by the double decomposition of potassic nitrate (saltpetre) and sulphuric acid:

$$KNO_2 + H_2SO_4 = HNO_3 + HKSO_4.$$

From 11222 grains of the salt, 1 lb, by weight of nitric acid, HNO_3, may be thus obtained. On a manufacturing scale, soda-saltpetre, or nitrate of sodium $NaNO_3$, is substituted for the potassic salt. Calculate the number of grains of soda-saltpetre required to yield 1 lb. of the acid.

Liq. Ferri Perchloridi fort. *B. P.*—In the 10 fluid ounces of this solution obtained by the officinal form, what is the total weight in grains of ferric chloride Fe_2Cl_6?

Specific Gravity.—1. A bottle capable of holding 500 grains of distilled water will hold 922·5 grains of sulphuric acid. What is the sp. gr. of the acid?

2. The same bottle will hold only 396 grains of turpentine. Required, the sp. gr. of this liquid.

3. What is the weight of a gallon of rectified spirit the sp. gr. of which is 0·838?

4. A piece of metal weighs 5·21 grains in air, and 4·13 grains in water. What is the sp. gr. of the metal?

5. A bottle capable of holding 100 grammes of distilled water is taken empty; into it we weigh 15 grammes of sand, and then fill it up with distilled water. The water and sand together weigh 109·6 grammes. What is the sp. gr. of the sand?

6. When the atmospheric pressure is indicated by 30 inches of mercury in the barometer, what is the height of the column of water which this pressure can support, taking 13·6 as the sp. gr. of mercury?

ANSWERS.

Weights of the Officinal Acids (January, p. 23).—Water being the standard of specific gravity, the weights required are obtained by multiplying the absolute weight of a pint of water by the specific gravities. Taking 8750 grains as the weight of a pint of water, we get the following results:—

	Sp. gr.		Grains.
Acid. Aceticum . .	1·044	a pint weighs	9135·00
,, ,, dil. . .	1·006	,,	8802·50
,, Hydrochloricum .	1·16	,,	10150·00
,, ,, dil.	1·052	,,	9205·00
,, Nitricum . .	1·42	,,	12425·00
,, ,, dil. . .	1·101	,,	9633·75
,, Sulphuricum . .	1·843	,,	16126·25
,, ,, dil. .	1·094	,,	9572·50
,, Sulphurosum . .	1·04	,,	9100·00

[Answers received from *J. Robinson*, Chester-le-Street (correct with the exception of acid. sulphurosum); *I. Tansley*, Kingsland-road (correct with the exception of acid. nit.); *A. Nicholls*, Penzance (correct with the exception of acid. sulphurosum); *T. S. Sanders*, Salford (correct); *J. Young*, Leicester (correct); *W. N. C.* (calculated from imperfect data).]

Note.—Though the above results are in accordance with the only data furnished by the *B. P.*, they are not absolutely correct, as by Act of Parliament the imperial weights and measures are justified at 62° F., while the Pharmacopœia specific gravities are taken at 60°. The errors introduced into calculations by the use of these two different standards are very minute, and may be safely disregarded.

OUR LIBRARY TABLE.

Under this head we propose to give the full titles of all new books and new editions sent to us for review, with brief descriptive notices. Many of the books thus introduced to our readers will be critically reviewed in subsequent numbers. We have been led to adopt this course by the desire to secure time for the thorough examination of those scientific works on the merits of which we are expected to pronounce judgment.

A Manual of Inorganic Chemistry, arranged to facilitate the Experimental Demonstration of the Facts and Principles of the Science. By Charles W. Eliot, Professor of Analytical Chemistry and Metallurgy in the Massachusetts Institute of Technology, and Frank H. Storer, Professor of General and Industrial Chemistry in the same. First English Edition. Post 8vo, cloth. Pp. 678. Woodcuts. Van Voorst. 10s. 6d.

We regard this as the best manual of chemistry that has been offered to the student since the publication of Fownes's classical work. It has not been written in the interest of any particular theory or system of notation, but simply with the intention of exhibiting, so far as is possible within the limits proper to an elementary manual, the present state of the science. The authors state that in preparing the work, their object has been to facilitate the teaching of chemistry by the experimental and inductive method. The result of their labours is a book that will enable the careful student to master the main facts and principles of the science, through the attentive use of his own perceptive faculties, by a process not unlike that by which these facts and principles were first established. No fewer than 364 separate experiments are minutely described, and each of these experiments has its proper place in the authors' systematic exposition of the science. The laws of chemical combination are gradually unfolded, and the theories pertaining to them fully discussed. The new atomic weights are adopted, and their relations to the combining volumes and specific heats of the elements are clearly explained. Throughout the work, however, the authors never miss an opportunity of reminding the student that theoretical views do not affect the actual composition or properties of a single element or compound, but are merely questions of interpretation, classification, and definition. In these days, when most English chemists seem disposed to dogmatise upon such questions, we have special cause to be grateful to the American professors for their practical teaching. We may conclude this preliminary notice of the Manual by strongly recommending it to every student who requires a work which sets forth the principles of chemistry, and at the same time gives minute details of laboratory processes and manufacturing operations.

An Introduction to Practical Chemistry. By John Attfield, Ph.D., F.C.S., Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain, etc. Post 8vo, cloth. Pp. 453. Plates. Van Voorst. 10s. 6d.

Though Dr. Attfield has introduced the vague term "Pharmaceutical Chemistry" into the title of his book, he virtually admits that there is no special chemistry for pharmaceutical students. He has produced a handbook of practical chemistry which may be profitably used as a laboratory guide by medical and pharmaceutical students, but he has not clipped his science to bring it to the measure of certain examinations. For "cramming," the book is utterly unsuited, as its teaching is rigidly systematic, and based on experiment. Reserving for a future occasion the publication of a critical account of this work, we may simply state our conviction that it is destined to pass through many editions, and become the standard laboratory guide for pharmaceutical students.

The First Step in Chemistry. A new Method of Teaching the Elements of the Science. By Robert Galloway, F.C.S., Professor of Applied Chemistry at the Royal College of Science for Ireland, etc. Fourth Edition, re-written and enlarged. Woodcuts. Cloth, foolscap. 8vo, pp. 500. Churchill. 6s. 6d.

For the teaching of chemistry in ordinary schools and in science classes, the "First Step" is peculiarly adapted, and the new and enlarged edition which has just appeared, cannot fail to attract the attention of teachers. Professor Galloway regards Chemistry as an important instrument for developing the intellectual faculties, and thinks that the authors of most educational works on the science have lost sight of the true end of all higher education, "which is not so much to fill the mind as to quicken and train its powers—not so much to impart knowledge as to awaken thought." In the "First Step" the truths of chemistry are taught methodically by progressive exercises, experimental and theoretical, which may be likened to the more rigid problems and theorems of geometry. The author has added a great number of exercises to the new edition, among which are many selected questions in chemistry and electricity from the papers of different examining Boards, especially from those of the Science and Art Department. In Part I. the old notation and nomenclature are used; but in Part II., which is entirely new, the modern theories with the new notation and nomenclature are fully explained. In spite of rofessor Galloway's recommendation that the old forms f expression should be mastered by the student, we cannot elp thinking that the retention of the obsolete atomic ghts was a grave mistake. Fortunately the peculiar rits of the work are not obscured by the slight haze of discarded theory which is perceptible in Part I. The old notation and the ideas conveyed by such expressions as "single elective affinity," and "double elective affinity," do not affect the value of the exercises, and are not likely to prevent the realisation of the author's hope that the present edition "will aid in the more general cultivation of chemistry as a branch of general education."

Owen's Conspectus; or, Students' Remembrancer. Showing, in a tabular form, the Latin name (with its correct pronunciation) of each Article as in the British Pharmacopœia, 1867, its English Name; together with its Synonyms; with a List of Preparations into which it enters, and its Proportion thereto; to which are added the Dose, Operation, and Use; Specific Gravity, and Chemical Composition. Longmans. 2s. 6d.

This long title describes a very useful compilation, interleaved with ruled writing paper, in order that it may be employed either as a note-book by Students, or as a Private Receipt Book by Druggists. At present we can only say that the results of a cursory examination are quite satisfactory, and lead us to believe that the work has been prepared with great care. Articles newly admitted to the Pharmacopœia, as well as those in which any change has taken place either in name or composition are clearly distinguished. We shall notice this pharmaceutical reference-book again when we have gone through it with the Pharmacopœia.

First Principles of Modern Chemistry. A Manual of Inorganic Chemistry for Students, and for use in Schools and Science Classes. By U. J. Kay-Shuttleworth. 8vo, cloth. Pp. 222. Churchill. 4s. 6d.

There is much to admire in this little work, and chemists may study it with profit. We cannot, however, recommend it as a manual for use in schools and science classes. Its title is misleading. The "modern chemistry" which it elucidates is the doctrine of atomicity as extended by Frankland, and the "inorganic chemistry" discussed in its pages does not comprehend the chemistry of the metals. The system of notation employed is that proposed by Dr. Frankland in his "Lecture Notes for Chemical Students," a system which is condemned by many modern chemists. Though Mr. Kay-Shuttleworth has not fairly described his book in his title, we must admit that he has produced a valuable addition to the literature of modern chemical theory. The chapters on Heat will afford the student much information that may be accepted without hesitation.

Chemical Notes for the Lecture-room, on Heat, Laws of Chemical Combination, and Chemistry of the Non-Metallic Elements. By Thomas Wood, Ph.D., F.C.S., etc. Second Edition. 8vo, cloth. Pp. 122. Longmans.

The first edition of this work was disfigured by many glaring errors, which appear to be corrected in the present one. These Notes are solid bits of condensed chemistry intended for the use of students who are cramming for the London University Matriculation and other examinations of a similar elementary character.

The Homœopathic Medical Directory of Great Britain and Ireland, and Annual Abstract of British Homœopathic Serial Literature. 1868. Henry Turner and Co., 77, Fleet-street. 3s. 6d.

According to the editor's notice, every medical man in Great Britain and Ireland who is prepared to avow his faith in Homœopathy is named in the pages of this Directory. Moreover, the work comprises a Calendar, and a carefully-compiled abstract of British homœopathic literature.

THE MONTH

THE CHEMISTS' ANNUAL BALL.

On the evening of the 22nd ult. the second Annual Chemists Ball was held at Willis's Rooms, St. James's, under the patronage of the leading members of the trade. The presence of the President of the Pharmaceutical Society and many representatives of the principal wholesale houses gave the gathering an importance which must facilitate the future work of the gentlemen who have succeeded in making the Chemists' Annual Ball a recognised institution. The following gentlemen were announced as stewards:—F. Baron, Esq.; Charles Bass, Esq.; Robert Bentley, F.L.S.; I. Bourdas, Esq.; M. Carteighe, F.C.S.; O. Chard, M.B.; G. Francis, Esq.; Charles Harvey, Esq.; Edward Harvey, Esq.; A. Hinton, Esq.; H. O. Huskisson, F.C.S., Joseph Ince, F.C.S.; J. G. Johnson, Esq.; Alfred Low, Esq.; Charles Maw, Esq.; T. Morson, jun., F.C.S.; J. G. F; Richardson, F.C.S.; Robert Risdon, M.R.C.S.; R. S. Starkie. Esq.; John Wade, Esq.; R. B. Warwick, Esq.; William Watts, Esq.; John Williams, F.C.S.; Francis Yates, Esq. *Committee*:—Dr. Attfield (Chairman); I. Bourdas, jun., Esq.; E. Bremridge, Esq.; G. J. Haddock, Esq.; John Harper, Esq.; Henry Smith, Esq.; W. A. Tilden, Esq.; A. C. Trotman, Esq.; Thomas Billing, Esq. (Treasurer); Thomas D. Watson, Esq. (Secretary.) Many of these gentlemen, with other active supporters of the first Ball, were prevented from attending on account of personal or family illness, but their places were filled by new representations of the London trade.

The number of tickets issued was 270; the number of ladies and gentlemen actually present 264. The receipts amounted to £178 18s., while the expenditure reached the sum of £177 17s. The solitary guinea forming the balance is a small sum, but being on the right side it is encouraging to the promoters of the Ball, who were prepared for a partial failure, owing to the unavoidable absence of many friends, and to the general depression of trade. Of course the small balance goes to the Benevolent Fund of the Pharmaceutical Society, and the Guarantors who promised a guinea each towards the expenses should the balance have been against the Executive will not be called upon.

After the supper, which was remarkably well served, Dr. Attfield, the Chairman, rose in obedience to a general call, and spoke as follows:—

"Ladies and gentlemen, we will, if you please, drink to but one toast, the only one we had last year, the one to which, it is hoped, we shall annually drink for many years to come—'Success to the Chemists' Annual Ball.' (Great cheering.) From the manner in which you have received the mention of that toast, it is to be inferred that the present Ball has afforded you much enjoyment. You will be glad to know that the Treasurer reports it to be even more successful than that of last January. Gentlemen, most of our past, present, and prospective pleasure in connection with this Ball we owe to the strong support we have received from the ladies. So long as they, in such numbers, give us the charm of their presence, so long will gentlemen be found who will vie with each other in making the necessary arrangements for this annual reunion, and who will ever experience ample reward if they only meet with success. Ladies, while we thank you for being here, we ask for your influence at home on behalf of future gatherings. Do what you can to induce others from your social circles to join us in these pleasant parties. Only do this, and the Chemists' Ball will certainly become a permanent institution, an institution which will do much towards encouraging amongst us, as a class, good-feeling, friendship, and *esprit de corps*."

Dancing was kept up with great spirit for five or six hours, to the excellent playing of Coote and Tinney's well-known band.

The last act of the present committee will be the issuing of advertisements towards the close of the present year calling a meeting of gentlemen on the evening of the 11th of November at the rooms of the Pharmaceutical Society for the purpose of making arrangements for the Third Annual Ball.

UNITED SOCIETY OF CHEMISTS AND DRUGGISTS.

EXECUTIVE COMMITTEE.

Adjourned Meeting, January 23, 1868.

Present—Messrs. Pass, Warden, Garner, Buott, Heppell, Beere, and Betty.

Mr. Horatio Pass, V.P., *in the Chair.*

The minutes of the Executive Committee Meeting, held on December 5, 1867, were read and confirmed.

A communication of a vote of condolence to Mr. Buott, the Secretary of the Society, on the occasion of his bereavement, was received from the Hull branch of the Society.

The following resolutions were read:—

From the Sheffield Branch.

Moved by Mr. E. P. Hornby, seconded by Mr. G. B. Brown, and duly carried:—

"That the secretary write to the executive, asking them to furnish the different local secretaries with a copy of the proposed Pharmacy Bill at the earliest opportunity."

(Signed)

R. O. Huddleston, Hon. Sec.

From the Hull Branch.

Moved by Mr. Hollingsworth, seconded by Mr. Staning, and carried unanimously:—

"That this meeting deeply regrets the silence observed by our executive committee with reference to the proposed Bill, and deems it desirable that full information should be afforded, and that a copy of the Bill in its most recently altered form should be forwarded without delay to each branch society for the consideration of the trade in general."

(Signed)

W. Shaw, Hon. Sec.

From the Sunderland Branch.

"The members of the Sunderland branch are waiting anxiously to hear if the committee have received any reply from the Pharmaceutical Society on the subject of again presenting the Bill, as agreed between the two Societies, before the Houses of Parliament. They need hardly say that their anxiety extends to the retaining of the Bill in its integrity, and they wish it clearly understood that they will not be a party to any further concession to the pharmaceutical body." (Signed)

Harrison Thompson, Chairman.
W. B. Harrison, Hon. Sec.

Communications from Vice-Presidents and other members of the executive committee, protesting against delay, were also read.

The following letter was received from the Pharmaceutical Council in reply to an application from the Executive Committee, sent a month previously, for copies of the proposed Bill:—

"To Mr. C. Buott, Secretary, United Society of Chemists and Druggists.

"January 6th, 1868.

"Sir,—I am instructed by the Parliamentary Committee, which met this day, to say that until it is decided whether the Home Secretary will take up the question of Pharmaceutical Legislation on the part of Government, or that a Bill shall be introduced by an independent member of Parliament, the Committee think it would be unwise to circulate any copies of the existing Bill proposed by the Society.

"I am, Sir,
"Yours obediently,
"Elias Bremridge, Secretary."

After a long discussion upon the above correspondence, it was moved by Mr. Buott, jun., seconded by Mr. Warden, and carried unanimously:—

"That in reference to the communication from the Pharmaceutical Society, this Executive Committee cannot agree that it is expedient for all knowledge of the proposed Bill to be withheld from the trade until it is introduced into Parliament, and resolves unless full information be afforded before it is too late to make any alteration deemed necessary for the protection of the interests of the trade, to reproduce the United Society's Chemists and Druggists' Bill in Parliament, and ask for the same the full confidence and support of the trade."

With reference to a notice that had been sent to the Secretary, Mr. Betty moved for a tabulated return of the members of the Society.

It was resolved:—

"That as such return would incur great loss of time and money, and be of no benefit to the Society, the same be not accorded."

The meeting was then resolved into the ordinary Committee meeting of the Society, at which the following gentlemen were nominated upon the Executive Committee:—

Mr. Stannard, Croydon; Mr. Luff, Brompton; Mr. Padman, Thornton-street; Mr. Mellin, Wimbledon; Mr. Myers, Great St. Albans.

The meeting closed as usual with a vote of thanks to the Chairman.

C. Buott, Secretary.

BOLTON.

The fourth annual dinner of the Bolton District Association of Chemists and Druggists was held on the 23rd of January, at the house of Mrs. Lomax, "The Three Crowns Inn," Deansgate. Mr. Blain, President, in the chair; Mr. G. E. Griffin, Vice-President, vice-chair; when twenty-four members and friends of the Association partook of a most excellent dinner provided by the hostess, to which ample justice was done by those present.

The usual loyal and patriotic toasts having been duly honoured,

Mr. W. Hart proposed the health of Mr. Blain, the President of this Association, in an highly eulogistic speech, to which Mr. Blain briefly responded.

Mr. G. E. Griffin, Vice-President, proposed the toast of the evening, "Success to the Bolton District Association of Chemists and Druggists." In doing so, he said to him it was a great honour to occupy the position he then was in, and congratulated the meeting on the favourable position the unincorporated chemists found themselves in, in reference to the Pharmaceutical Society, and argued that it was in a great measure owing to the strong support the United Society had received from district associations that that position had been gained.

The President, in responding, remarked upon the firm Saxon character of the Bolton men in carrying out, so far as their powers went, that which they considered right, and their energy in opposing that which they considered wrong. In commenting upon the Amended Pharmacy Act about to be brought before Parliament, he said it was a step in the right direction, it was reform, which was much needed. He thought that many difficulties had arisen from want of a proper appreciation of each others position by the two societies. He did not think there was a man in that room, whatever might be his political principles, that would all at once, if ever, have fallen into the idea of throwing open to the whole of the trade benefits that he had worked for and paid his money for, for it must be allowed, on all hands, that the career of the Pharmaceutical Society, though not altogether successful from some points of view, still was very far from being useless in bringing about the reform so ardently wished for by its founders. Sympathy was needed on the part of the outsiders in appreciating the efforts which the Pharmaceutical Society had been making for many years, for the placing of the trade under proper regulations. He hoped that a fair basis had now been made for such a Pharmaceutical superstructure to be erected that will be an honour to Pharmacy for all time, within which the bickerings, jealousies, and selfishness that ever have been displayed by any party, shall sink into obscurity, which shall include the best men this kingdom can produce—men who shall shed a light upon whatever paths they tread, men whom the founders of the Pharmaceutical Society would be proud to see following in their wake. He urged upon the junior members study and examination, and when an Act of Parliament was gained, the whole trade would stand upon a more and more honourable footing every year that advanced, and hoped that all parties who might have to make some little sacrifice, will do so cheerfully in contemplation of so glorious a united trade.

Mr. Walker proposed the past officers of the Bolton District Association. Messrs. T. Goodman and E. G. Harwood responded.

Mr. P. Hampson proposed "The Town and Trade of Bolton;" to which Mr. W. O. Morris appropriately responded.

Mr. R. Knott proposed the health of their Secretary.

The Secretary, in thanking them for the kind manner they had received the toast, said "the office required, as Mr. Knott had remarked, time, trouble, and energy," and as much of all three as he could give would be a pleasure to him.

SHEFFIELD.

At the monthly meeting of the United Society of Chemists and Druggists, held February 12, 1868, at the Cutlers' Hall, Sheffield, it was resolved to present to the President of the Society (Mr. E. P. Hornby) the following resolutions, which we entrust in his hands to see that they are duly and efficiently enforced at the next monthly meeting of the London Executive; also, we being chemists and druggists, and not members of the United Society, give our hearty support to Mr. Hornby, to enable him to carry the principles of the proposed Pharmacy Bill to which we agree.

Resolved—"That in the opinion of the chemists and druggists of Sheffield, the principle and spirit of the proposed Pharmacy Bill deserves the support of the entire trade, and we members of the United Society and others will give it our support."

Resolved—"That in the opinion of this meeting, the resolution proposed at the last meeting of the Executive, viz., 'That a letter be sent, signed by the President and Secretary, to the Home Secretary, requesting him to suspend action on the Pharmacy Bill until the opinions of the District Associations be obtained' be rescinded, its tendency being factious and vexatious, and utterly at variance with the best interests of the trade."

Resolved—"That the best thanks of this meeting be given to our fellow-townsman, Mr. E. P. Hornby, for the discretion and promptitude displayed in availing himself of the opportunity for advocating and advancing the interests of not only us but of the trade generally, and assuring him of our entire support."

We declare these resolutions to have been duly passed.

(Signed)
William Ward, President.
Edward Barker, Vice-President.
R. O. Huddlestone, Hon. Sec.

DUNDEE CHEMISTS AND DRUGGISTS' ASSOCIATION.

The second monthly meeting of this Association was held on the 8th ult., the chair being occupied by Mr. Levie, the Treasurer. The minutes of the previous meeting having been read and passed, the Chairman invited Mr. Laird to read his promised paper

ON SWEET SPIRIT OF NITRE.

The author stated that in years past he had been in the habit of testing, from time to time, the various articles obtained from the wholesale houses, and that he had seldom found it necessary to return such articles on account of their divergence from the prescribed standard. After the meetings of the British Pharmaceutical Conference in Dundee, he determined to extend his practice of testing to articles which he hitherto accepted on trust. One of the first results of his examinations was the discovery that white precipitate sold in the town was not all like the pure Dundee sample reported on in the Conference paper. While engaged in testing different articles he had received from one of the most respectable London houses, a parcel of goods, containing a supply of spirit of nitre. On weighing a sample of this liquid, he had found that its sp. gr. was ·855, instead of ·845, as required by the Pharmacopœia—not a very great difference, but still one sufficient to be recorded in his note-book, and to give rise to a wish to ascertain how his brethren elswhere were served with the same article. He had then set about collecting samples, and having submitted them all to the same tests, he had resolved to bring the results before the Association. The author then went on to describe the various samples he had collected. With regard to their external appearance, he noticed that all the specimens, with three exceptions, were tidily done up, and wrapped in white paper, many of them being nicely sealed. Three were unlabelled, while one bottle was wrapped in a piece of dirty newspaper, unlabelled, and had a dirty cork, but the stuff itself was good, its sp. gr. being ·850, although it was sold at only 3d. an ounce. Of all the twenty-nine samples obtained, only one came close to the proper specific gravity; this weighed ·848. One sample weighed only ·837, and contained only half the required proportion of nitrous ether, having evidently been prepared by the process of the old London Pharmacopœia. Of the rest, six weighed ·850, five ·855, two ·857, one ·872, one ·875, two ·877, one ·890, one ·893, two ·900, one ·905, one ·920, one ·937, one ·952, and two ·956. Taking all the twenty-nine samples into consideration the author supposed that the first fifteen had been sold in the same state as they had been obtained from the makers; that the next nine had either been diluted with water, after having been taken into stock, or had been bought at low prices; and that the remaining five had been freely diluted by the retailers. He was constrained to make this charge against retailers, for he did not believe that any wholesale house offered spirit of nitre at a greater sp. gr. than ·900. With one exception, all the samples were more or less acid, some of them particularly so, and effervescing very freely with the addition of a solution of the bircarbonate of soda. The one exception referred to was so slightly acid that the litmus paper used as a test was inserted in the sample for a considerable time before it gave the slightest sign of changing; its sp. gr. was ·855. The conclusion of this able and interesting paper may be given in the author's own words:—

"I would now desire to notice first, gentlemen, the want of uniformity in the price of this article; twenty-one of the samples were sold at 4d. an ounce, eight at 3d., and one was sold so low as 2½d.; this, however, had evidently been a mistake, as the same man afterwards charged 8d. for two oz.; in the former case, he had probably mistaken an 1½ oz. phial for an oz. One of the first things to create distrust in the mind of the purchaser is the variety of price. A. charges a penny an oz. less than B., the difference in price on such a small amount is very perplexing to the public, and highly susceptible of having the worst possible construction put upon the transaction in the case of either party.

"Secondly, I would notice the great diversity of strength as shown by the different sp. grs. Imagine the article varying from ·837 to ·956. There is certainly just cause for Professor Christison's remarks, that 'Sweet spirit of nitre, when given for exciting the kidneys to increased secretion, frequently fails to act, from the extent to which the remedy is adulterated, together with the substitution, even in the best druggists' shops, of the weaker London preparation, for that formerly in use in this part of the country.' It would seem also to have been as bad in England some years ago, for I find Dr. Pereira writing that 'few articles of the Pharmacopœia are more extensively adulterated that spirit of nitric ether.' He then quotes a Mr. Hennell as saying, in 1840, "that it was then selling in the trade at a price which was just above that of the duty on the spirit used in manufacturing the genuine article." Whether the variety of strength is due to the desire for increased gain, or a fear that there may be some danger in selling it at the full strength, or due to an extent to the wholesale houses, I seek not to inquire; but certain it is that the tampering with drugs, either by dilution or wilful adulteration, cannot be too strongly condemned. And just as the public are entitled to fair play at the hands of the retailer, so is the retailer entitled to demand absolute purity from the manufacturer.

"I would, thirdly, call your attention to the almost universal acidity of the samples. According to the Pharmacopœia it effervesces feebly, or not at all, on the addition of a solution of bicarbonate of soda; only one of the twenty-nine samples answered to this test. I understand, from various writers, that spirit of nitre decomposes very rapidly, and that though feebly acid at first, it soon becomes charged with free nitrous acid, owing to its decomposition. One remedy for this would be only to order small quantities at a time, and if not perfectly fresh to return it. I have read that if a prescription containing iodide of potash and spirit of nitre be made up with the acid nitre, instead of a colourless liquid, you will have a dark brown fluid, containing nitrate of potash, and free iodine. I have not yet had time to try this with the different samples in my possession, but mean to do so on a future day, when it will be interesting to lay the varied results before you."

At the conclusion of this paper, which was received with marked attention by the meeting, an animated discussion took place, with regard to the price, quality, and strength of spirit of nitre, and Mr. Laird's views were generally adopted.

Mr. **Kerr**, referring to the acidity of the preparation, said that a small quantity of carbonate of magnesia kept in the stock bottle would neutralise the free acid.

Mr. **Laird**, in the course of some remarks upon the specific gravity of tinctures, suggested that the members in making tinctures, in future, should keep a note of their specific gravity, how prepared, etc., and send the collected results to the next meeting of the British Pharmaceutical Conference.

A hearty vote of thanks to the Chairman and to Mr. Laird terminated the proceedings.

SHEFFIELD ASSOCIATION OF CHEMISTS AND DRUGGISTS.

The usual monthly meeting was held in the Cutlers' Hall, on Wednesday, the 8th of January, when Mr. J. S. **Dobb** gave a very practical lecture on

ALCOHOL AND ITS SOPHISTICATIONS.

He said no mention was made by ancient writers of rectified or ardent spirits, nor were they acquainted with the art of distillation; but it appeared that in the reign of Henry II., the Earl of Pembroke found the Irish people indulging in usquabaugh, or whisky, the *aqua vitæ* of the Spaniards and Italians, and it is supposed that the monks of the latter places were the discoverers of the art of distillation. Alcohol could be produced from no substance by distillation, unless the material had previously undergone vinous fermentation. During this fermentation, all saccharine matter was turned into grape sugar before alcohol could be produced. The spirituous and intoxicating nature of all alcoholic beverages depended upon the quantity of alcohol present, and all spirituous liquors were identical when freed from their extraneous bodies from which they were obtained.

The peculiar flavour of various spirits depended upon the grain, fruit, or saccharine matter used, the manner of the fermentation, and the herbs, seeds, and berries with which they were infused. The lecturer then requested any gentlemen present to ask for a glass of spirits, which request was responded to, and gin, rum, and brandy were supplied, prepared from spirits of wine and essences made from flavoured fusel oil, thus proving that all spirituous liquors were identical when freed from their extraneous bodies. Fusel oil was so strong that two drops is sufficient to contaminate 100 gallons of spirit. To remove this when present, it was necessary to add caustic potash, which combined with the oil to form a soap, which remained in the still while the pure spirit distilled over. Spirits of wine, possessing a disagreeable flavour, might be improved by filtering it through hydrate of lime, and afterwards through animal charcoal.

Many pleasing and instructive experiments were shown, Syke's hydrometer explained, and a great amount of information of practical use to the chemist behind his counter was imparted. Alluding to proof spirit, the lecturer said that the old method of mixing equal portions of spirit and water together did not produce proof spirit. The British Pharmacopœia ordered five pints of spirit with three pints of water; this, if the spirit be of sp. gr. ·838, or ·56 over proof, would bring it to proof, as might be easily ascertained by introducing the hydrometer. In all fermented liquors, foreign matter was present, and the quantity of alcohol present would not be indicated by the specific gravity. The alcohol separated on saturating any spirituous liquor with anhydrous carbonate of potash, which was soluble in water but not in spirit. The solution thus treated separated into two layers—the upper one consisting of spirit, and the lower one of water. If this experiment was performed in a graduated tube, it was easy to ascertain at once the percentage of spirit present. The quantity of spirit in tinctures might be ascertained by this simple method; the colouring matter could be removed, if necessary, by filtering through charcoal.

If wood naphtha was present in alcohol, in proportion of even two parts in 100, it could be detected by adding anhydrous caustic potash, which turned the spirit brown in half an hour, but would not affect pure spirit under eight or ten hours. Alcohol, and all liquors containing it, had a powerful affinity for water, when swallowed in a concentrated state, or in a sufficient quantity diluted, it acted as a poison, probably by absorbing all the moisture from the tissues.

After a very interesting discussion, a unanimous vote of thanks was passed to Mr. J. S. Dobb for introducing so practical a subject.

YORK CHEMISTS' ASSOCIATION.

ANNUAL MEETING.

The annual meeting of the York Chemists' Association was held on Friday evening, the 31st January, at the King's Arms Hotel, when there was a numerous attendance, the President, Mr. George Dennis, being in the chair.

The Honorary Secretary, Mr. J. Brown, read the Report for the past year, which was received and adopted, and ordered to be entered on the minutes of the Society.

The balance-sheet and accounts were produced by Mr. Thomas Cooper, the treasurer, showing a surplus of £6 5s. 7d. to be carried to the credit of the present year.

The usual vote of thanks was accorded to the President, Officials and Committee for their services during the past year, and duly acknowledged.

The Committee and Auditors were then appointed, and the annual dinner was arranged to be held at the King's Arms Hotel on Tuesday, February 18. Annexed is a copy of the Report :—

" Third Annual Report.

"In submitting the third annual Report of the York Chemists' Association to its members, your Committee have great pleasure in drawing attention to its continued success, and the great interest taken in its prosperity by the members of the trade in York.

"Since the annual meeting held on the 8th of February last, your committee have held several important and interesting meetings for the transaction of business, and for the discussion of matters affecting the interests of its members.

"In recording the transactions of the past year, your Committee beg to state for the information of the Association that at its last annual meeting a special resolution was come to in favour of the joint action of the Pharmaceutical and United Societies in the preparation of a Bill to be submitted to Parliament for the future regulation of the trade; consequently, your Honorary Secretary forwarded the resolution to Messrs. Bremridge and Buott to be submitted to the respective councils of the two societies previous to their meeting at a conference to consider the question, and at which conference an agreeable unanimity was displayed, auguring well for the success of contemplated legislation.

"The result of the conference of the two societies was, that a Bill was again drawn up by the Council of the Pharmaceutical Society of a more liberal nature than the one submitted to Parliament in 1865, and at a meeting of this Association, specially convened to consider the Bill, it met with the general approval of those present, except on two or three points, which in their opinion needed revision. Resolutions were accordingly adopted, indicating the alterations proposed, and a copy sent to both societies, from both of whom they met with a favourable reception. Owing, however, to Parliament being engaged in considering a Reform Bill and other important measures, it was not found practicable to pass a Pharmacy Bill, and the introduction of it is postponed to the forthcoming session of Parliament.

"Your Committee would again draw attention to the provisions of the Petroleum Act as to the regulations for its storage, and the penalties for non-compliance with the Act, and would advise the members to make themselves fully acquainted with the subject, as it is understood its provisions are to be most stringently enforced.

"The annual dinner on the 26th of February last being again most successful, your Committee recommend a similar reunion at an earlier period, and would suggest Tuesday, the 18th February, as the most convenient for the festivity.

"Appended is the usual statement of accounts for the past year, showing a balance in hand of £6 5s. 7d.

	£	s.	d.
Receipts.			
To balance in hand and subscriptions, 1867 ...	16	19	11
Expenditure.			
To postages, stationery, meetings, sundries, and annual dinner	10	14	4
Balance in hand	6	5	7
	£16	19	11

(Signed) "George Dennis, Chairman.
"Thomas Cooper, Treasurer.
"John Brown, Secretary.

"York, January 31, 1868."

GOSSIP.

Mr. Locock, Her Majesty's Secretary of Embassy, reports that in the city of Osaka in Japan, which has just been opened to trade, there are at this moment no fewer than forty native photographers obtaining their lenses, plates, and chemicals from abroad, and all of them finding full occupation in every style of photography.

Mr. J. T. Walklate has succeeded to the business lately carried on by Mr. Mandley, Church-street, Newcastle. Mr. Mandley has retired from business.

Dr. Charles Taylor, M.D., St. And., of Pine House, Camberwell, has been elected a member of the Court of Examiners of the Society of Apothecaries, and Dr. Robert Norton, M.D., King's Coll., Aberd., M.R.C.P. Lond., has been elected Chairman of the Court, in the vacancies caused by the death of Dr. William George Thiselton Dyer, M.D., St. And., L.R.C.P., Edin.

The number of deaths from delirium tremens in the decenniad 1854-63, in London, was 1292; from intemperance, 889.

The Court of the Apothecaries' Company have decided that ladies shall be admitted to the examination in Arts at the Hall.

GAZETTE.

PARTNERSHIPS DISSOLVED.

Bell and Thorn, Cannon-street, manufacturers of lucifer matches.
Caind and Payne, Exeter, surgeons.
Clarke and Wallace, Bury St. Edmunds, photographers.
Eastes and Fitzgerald, Folkestone, surgeons.
Goddand and Goddand, Edgeley, druggists.
Greenall and Burton, Manchester, size manufacturers.
Hutson and Cutting, Market Rasen, veterinary surgeons.
Johnson and Dolman, Derby, surgeons.
Moon and Chapman, Lower Norwood, surgeons.
Ogden and Ebdell, Leeds, druggists.
Palmer and Wyatt, Idol-lane, Eastcheap, spice brokers.
Partridge and Partridge, Colchester, surgeons.
Potter and Kent, Chipping Ongar, surgeons.
Shillito and Davis, Putney, surgeons.
Tapson and Tapson, Clapham, practitioners in medicine.
Tonge, Hodgkison, and Co., Upper Thames-street, druggists.

BANKRUPTS.

Alexander, James, Newcastle-upon-Tyne, physician.
Clayton, Henry, Dowlais, ginger beer manufacturer.
Dodds, Walter George, Cranbourne-street, Leicester-square, perfumer.
Field, Victor Edwin, Alverstoke, dispensary assistant.
Hensman, Charles, Wellingborough, chemist.
Hollingsworth, William Stamp, Kingston-upon-Hull, chemist.
Lindsey, Frederick, Brompton-road photographer.
Nicholas David, Aberdare, veterinary surgeon.
Packer, Thomas Ward, Nelson-terrace, Hackney, paraffin oil merchant.
Pritchard, Richard, Mile-end-road, medical herbalist.
Sermon, George, Manchester, veterinary surgeon.
Slack, George, Sheffield, druggist.
Smith, George, Little Portland-street, Regent-street, isinglass importer.
Witchellow, William, Mile-end-road, medical herbalist.
Young, Henry, Walbrook, fine colour manufacturer.

SCOTCH SEQUESTRATIONS.

Forsyth, Joseph, Kirkcudbright, chemist.
Jackson, John William, Burnt-island, photographer.
Stone, John Wilkinson, Glasgow, philosophical instrument maker.

DECLARATIONS OF DIVIDENDS.

Beesom, J., Birmingham, druggist, 1s. 10½d.
Moon, W. C., Sunderland, druggist, 2s. 1½d.

Correspondence.

THE UNITED SOCIETY AND THE PHARMACY BILL.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

Sir,—You have already received my report of the proceedings of the meeting held here on the 23rd January, but I regret I am prevented from sending you a report of the important meeting of the Executive Committee on the 6th instant.

As the responsible reporting officer of the society it is my duty, through the columns of your journal, to make this explanation.

I am, Sir, your obedient Servant,
11th February, 1868. C. Buott, Sec.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

Sir,—I send you an abstract of my remarks on the subject of pharmaceutical legislation at the last meeting of the Executive Committee of the United Society of Chemists and Druggists (February 6), together with a copy of a letter I have since addressed to the secretary, which I am desirous should appear in your forthcoming number.

Yours truly,
E. P. Hornby, President.

The President's Remarks at the Meeting.

"The information which I have the gratification of being able to give will not only, I hope, be acceptable to you as a committee, but be hailed with truly joyous welcome by all having the welfare of the great body of the trade at heart. In order that there may be no mistake, I declare that a just sense of duty to the whole community of chemists and druggists has been my only guide, and that I take upon myself the responsibility attached to my doings; yet I must add that had my time of action been less limited, I would not have taken the course I did without first consulting my coadjutors. Feeling, however, that to neglect the opportunity on my part would be an act of cowardice, and would militate against us, I resolved boldly to champion our cause in good earnest, with a result which will be highly satisfactory to all. Therefore, without apology or further preliminary statements will give you the information alluded to.

"On Saturday last Mr. Sandford, President of the Pharmaceutical Society received a communication from the Home Secretary appointing one o'clock on Tuesday for the reception of a deputation on the Pharmacy Bill. On Monday I had a letter from Mr. Sandford, inviting me to attend at Bloomsbury-square, at twelve o'clock on Tuesday, to meet the Parliamentary Committee. Having had a copy of the proposed Bill, and having, together with our local secretary, carefully gone through it, and finding nothing but what I could support, I started off by train on Tuesday, arriving in London at 12 o'clock, proceeding straight to Bloomsbury-square. I met our worthy ex-president, Mr. Mathews, our vice-president, Mr. Pass, and friend Betty, and finding that our views were all in accord, I took my ground of action accordingly. Upon taking our seats at the council board, I was asked what objections I had to the Bill (if any), for that I had only to point out any defects, and so long as the objection did not interfere with the principle of the Bill, they would fairly meet me. I replied that the principle and spirit of the Bill should have my hearty support, reserving the right to amend any detail that we conceived injurious to us as a body. Upon this announcement, we proceeded to the office of the Home Secretary, and the interview with that gentleman was, to me, very satisfactory. And he intimated that in a short time we should hear from him whether the Government would adopt the Bill as a measure of their own or not; but if not, he felt sure that the Government would offer no opposition to it, he, the Home Secretary, approving the principle of the Bill.

"Thus ended the first step towards that amalgamation which we have so earnestly striven for the last five or six years, and which I sincerely trust will bear fruit of such a character as will enable every chemist and druggist to express himself satisfied with. I therefore now leave myself in your hands to confirm the course of action I have pursued, and thus enable me to carry through the great object we have in view, viz., amalgamation and fraternisation with the Pharmaceutical Society."

Copy of Letter to the Secretary.

Attercliffe, Sheffield, Feb. 11th, 1868.

Mr. Buott.

Dear Sir,—After careful and thoughtful consideration, I have come to the conclusion that the interest of all Chemists and Druggists, whether Pharmaceutists or not, will be best consulted by withholding my signature to a Resolution "in itself out of order," until the minutes of the meeting, held on the 6th inst., be confirmed by the next, feeling confident that the Committee never intended to pass a Resolution so detrimental to the interests of our members and others not connected with us.

I therefore take upon myself the responsibility, and resolve that the minutes of the last meeting shall be confirmed before giving my signature.

I remain, yours truly,
E. P. Hornby, President.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

Sir,—It is gratifying to speak of the probability of an amended Pharmacy Act being passed this Session.

The objects and spirit of the amended Bill, as expressed in the preamble, and the clauses to carry these objects into effect, are nearly word for word identical with the one printed in April last, and which, through the means of the United Society, was deliberated upon at so many public meetings (Halifax, Leeds, Blackburn, Dewsbury, Hull, Oldham, etc.), and so warmly approved of. It is on this account that, in accompanying a deputation to the Home Secretary, the Presidents of the Pharmaceutical and United Societies could justly express the opinion that such a Pharmacy Bill was so drafted as to deserve the support of the trade. Mr. Hardy, in reply, though not at the moment prepared to pledge Government in introducing it, expressed his approval of the principles of the Bill.

The London Executive of the United Society has since the receipt of the Bill as amended, voted the preamble and the first clause, and voted their best thanks to the President for his attendance at the Home Office, and for his services on that occasion.

Although time did not admit of each clause being read over, no difference of opinion was expressed by any member of the trade on them, and the agreement on the general merit of the clauses is unequivocally established. I do not believe any clause unjustly affects any member of the trade, but I feel assured any communication with the Pharmaceutical Society would be received in the same liberal spirit they have hitherto shown.

As to the alterations in the Bill, they consist of one clause, carrying out Mr. Carteighe's amendment at the general meeting of the Pharmaceutical Society, and this, with the abolition of the residential clause for assistants conducting the business of widows, trustees, etc., and the non-application of the poison-labelling clause to exported articles, exhaust the list.

According to the provisions of the Bill as amended, all apprentices of two years' standing and assistants can be registered as "chemists and druggists," and this name secures to them every right to its fullest extent, as if no Pharmacy Act had passed, and the Bill further guards their title as chemists and druggists from being assumed by any not qualified by examination; they are, moreover, on application, eligible for election as "Associates of the Pharmaceutical Society," and this title of associate being retained for those who pass the minor examination, it would seem unjust to confer a higher one on others who have passed no examination, nor can it be claimed on the ground of equal rights with the unexamined members of the Pharmaceutical Society, as they become so by virtue of being men in business.

The resolutions of the Select Committee of the House of Commons on which Government would legislate were "That there should be no compulsory examination for men in business," and that, after a certain date, "no one should sell dangerous drugs and chemicals who has not passed an examination."

In the present Bill, the line is much more widely drawn. The object stedfastly kept in view appears to be the benefit of all and no fraction of commercial disability or even inconvenience to anyone.

Thus, assistants and apprentices, equally with their employers, will hail with unmixed satisfaction the incorporation, protection, and elevation of the trade.

I am, sir, Yours truly,

A Member of the Executive of the United Society.

February 9, 1868.

THE *VERITABLE* OUTSIDERS.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

Sir,—Your having invited correspondence has induced me to depict the rustic parasites, as a companion picture to the urban pests of our profession, as delineated in this month's number of the journal.

The first I shall place on the scene is the itinerant quack doctor. This is generally a bloated, repulsive-featured man, given to misplace his h's, and affected with Inverness capes and ivory-handled cane, silver (German) mounted, with which he makes prodigious flourishes, as he swaggers from door to door—caricaturing the professional swing of the medical man; and with a pompous rap asks for the circular "which my young man left yesterday." Whilst this limp and soiled paper—suggestive of the poetical effusions of the rag and bone collector, similarly distributed; and which frequently has been delivered by his wife, or even himself, divested of cape, and cap substituted for his hat—is being reached, he insinuates himself into the house, and if a woman (his principal dupes) is alone, makes most astounding revelations as to her health, which he has already "read at a glance," and too often palms off his "infallible" trash at a fabulous price. He puts up at a third-rate inn, and late at night, with a short black pipe in his mouth, may be seen cautiously entering a chemist's shop, where he asks for a pennyworth of cambogo and of aloes, and a "quartern of yellow soap, if you keep it, as that they put for him at the inn is so common." This is generally his whole stock in trade; but if prosperous, he may also ask for two bottles and a pennyworth of liquorice powder. Sometimes his dupes are so sharp that they request him to write a prescription; but this avails nothing, as he scrawls a few hieroglyphics, pockets his fee, and is gone before the deception is found out. That it is a profitable pursuit there can be no doubt, but it is also a very precarious one, as I have known a man minus a shirt, driving a fourwheel two months afterwards, and again so reduced as to beg a small piece of aloes, 'yclept "holloway," to "wean a baby with!"

The next character is the resident quack, but to this one the Dr. is seldom used, unless such a term as "water," "eye," or "itch" is tacked on to it, and which suggests the branch of the profession they practise. Their knowledge and use of drugs is very limited. For internal remedies it is generally saltpetre and an infusion of a few garden herbs or field plants. By the use of these I knew one who endeavoured to cure a child that was ruptured. For external, they are almost exclusively confined to white and red precipitate and quicksilver, mixed either with lard or oil of bays. I know one person that has had all the itch cases in a large district for many years, for the sole reason that the remedy used has no disagreeable smell. It consists of ½ oz. of quicksilver with same quantity of oil of bays, and directed to be applied on the pulse at the wrist. To this practice is sometimes added a little of the black art, such as selling charms for the cure of fits, to procure a lover, or tell a fortune; also that of destroying the results of having "loved, not wisely but too well."

Another member of the fraternity is the vendor of real Turkey rhubarb, which, at its best, is but English grown, but more commonly selections from the younger growth of the larch or fir, well dressed with turmeric. A common ruse of this personage is to get into conversation with a chemist, and after having been seen, go away and say "I have just sold Mr. So-and-so 3 lb."

Last, but not least, we have the general dealer, who keeps an heterogenous stock of candles and Epsom salts, tincture rhubarb and treacle, Godfrey's and lamp oil, pil cochiæ and boot laces, magnesia and mouse-traps, laudanum and cart-grease, who, when any customer complains of an aliment, recommends a drop of "Tinkery rhubub, as I was jest like that the other day, and it set me to rights in no time;" but which commodity he only distinguishes from laudanum by the label on it. He is supplied with unlimited quantities of any drug, poisonous or otherwise, by some druggist from a neighbouring town, who, for the sake of a trifling present gain cares not what injury he does another member, or the future prosperity of the trade.

Some would include in this sketch the farrier, but as I consider him a necessary evil which, as trained veterinarians and chemists are becoming more general, is fast dying out, I will dismiss him merely with the wish that he was gone.

T. G. Holmes, Chemist.

Brill, Jan. 21, 1868.

NOTES & QUERIES

B.B.—The labels certainly render the preparations liable to stamp duty.

R. Walters.—Beasley's Druggists' Receipt-Book, price 6s. Churchill, New Burlington-street.

"*Chemist*" is in want of good formulæ for Liq. Rhei dulcis and Liq. Sennæ dulcis.

W. G. (Heckington).—"The Art and Mystery of Making British Wines, Cider, Perry, Cordials, and Liqueurs." London: Chapman and Hall.

Anti-Neuralgic Powder.—Sulphate of quinine, 7·75 grains; sulphate of morphine, 3·10 grains. Mix, and divide into three doses. Take in snuff, every two hours, in periodic neuralgia.—*Jour. Materia Medica.*

To Prevent Sickness from the Inhalation of Chloroform.—A medical writer recommends that a few drops be given in water as a drink prior to the inhalation. He says the plan has invariably proved successful.

"Solidified Glycerine."—According to the Analytical Reporter of the *Lancet*, "Price's Solidified Glycerine" really contains about half its weight of glycerine, the per-centage analysis being: Water, 21·5; fatty acids, 29·5; soda, 3·7; glycerine, 45·3.

Oil Stains in Marble.—Stains in marble caused by oil can be generally removed by applying common clay saturated with benzol. If the grease has remained long enough, it will have become acidulated and may injure the polish, but the stains will be removed.

Useful Cement.—An excellent cement for attaching glass and brass may be prepared by first forming a resin-soap by boiling three parts of resin and one part of caustic soda in five parts of water, and then mixing this with half its weight of plaster of Paris. This cement is said to be impervious to petroleum, only superficially affected by water, to adhere very strongly, and to be a bad conductor of heat. —*Jour. Franklin Inst.*

Bromide of Potassium in Hysteria.—American physicians appear to have met with much success in hysterical cases treated with bromide of potassium. Dr. Dorr communicates to the *Pacific Med. and Surg. Jour.* (St. Francisco) some suggestive notes on a case of severe hysterical convulsions, the patient being an English lady. On being consulted, he prescribed half-drachm doses of the bromide three times a day about meal times. After the patient had taken four doses, Dr. Dorr thought it advisable to decrease the doses one-half. The improvement of the patient under this treatment was most satisfactory.

Tonic with Cod-liver Oil.—Dr. Adolphus, of Michigan (*Med. and Surg. Reporter*) recommends a formula for the combination of a tonic with cod oil, which he has employed with marked success, in obviating the nausea so frequently occasioned by the medicine in its simple form. Triturate 2½ oz. chlorate of potassa with 8 oz. glycerin, and add 14 oz. soft water, aiding the solution by heat. Dissolve 3 grains strychnia in 2 oz. tinct. ferri chlor., by the aid of heat, and add it to the mixture, together with 8 oz. alcohol. Give a tablespoonful three times a day. "Gentlemen of the profession," says he, "will be astonished at the marvellous power of the above tonic in aiding the digestion of cod oil in strumous cases, consumption, etc.

Glycerine and Yolk of Egg.—The Philadelphia *Journ. of Pharmacy* has made known a formula for a preparation which is likely to prove valuable for external use. Four parts, by weight, of yolk of egg are to be rubbed in a mortar with five parts of glycerine. The compound has the consistence of honey, and is unctuous like fatty substances, over which it has the advantage of being easily removed by water. It is unalterable, a specimen having laid exposed to the air for three years unchanged. Applied to the skin it forms a varnish which effectually prevents the action of air. These properties render it serviceable for broken surfaces of all kinds, particularly erysipelas and sore nipples, and for cutaneous affections, of which it allays the itching. In the case of sore nipples, its harmlessness prevents any interference with suckling.

Sulphurous Acid and Sulphites as Remedial Agents.—In a case of tertian ague, under the care of Mr. Partridge, at King's College Hospital, sulphite of magnesium was given in doses of half a drachm in water, three times a day. The patient had been subject to similar attacks for twenty-two years, but they had invariably been of longer duration. Whether the treatment by sulphite had anything to do with the unusually short attack, it is, of course, impossible to say; but the case is at least suggestive, and, considering the prominence given by Dr. Polli, of Milan, Dr. Dewar, of Kirkaldy, and others, to the beneficial effects of sulphurous acid in diseases of a somewhat similar nature, the agent seems worthy of further trial. Indeed, Dr. Polli's experiments seem to show that sulphurous acid has great power in arresting the fermentation of animal and vegetable matters within the living body. This property is also found in the alkaline and earthy sulphites, and especially in the sulphite of magnesium, which is richest in sulphur, and, in addition, has no smell, very little taste, and is little affected by the air. The suphites pass into the urine partly in the state of sulphates, and partly as undecomposed sulphites.

Carbolic Acid.—The Resident Medical Officer of St. Pancras Infirmary writes, in the *British Medical Journal*:—I have found carbolic acid (sixty drops to the ounce of lard) of very great utility in cases of diseases of the skin connected with fungoid growths; and have also used the acid (one drop to two ounces of water) with some benefit in cases of purulent ophthalmia. The record of the results of the experience of those of your readers who have employed this agent in similar cases would be most valuable.

Carbolic Acid in the Treatment of Scalds or Burns.—Dr. Allan Wilson in the *Lancet* states that he has recently used carbolic acid with marked benefit in the treatment of severe scalding, and gives full details of two striking cases. The method of applying the remedy is thus described:—

1st. To thirty parts of the ordinary oil and lime-water add one of the acid and mix.

2nd. Saturate linen rags in the carbolic emulsion, and spread them on the scalded parts.

3rd. Keep the rags moist by smearing them over frequently with a feather dipped in the emulsion.

4th. Cover application with oiled-silk or gutta-percha tissue.

The advantages of this mode of treatment are twofold, as was well exemplified in two cases brought forward by the author, one of which was of a most serious nature, involving the face, neck, and chest of a child two years of age.

1st. It excludes or destroys the noxious elements of air, and in this way will diminish shock by removing the causs of local irritation.

2nd. The sores are allowed to heal rapidly by a natural restorative action, without the formation of pus, consequently preventing a most frequent secondary cause of death in burns—namely, purulent infiltration of the lungs or other internal vital organs, and also in a great measure preserving the personal appearance of the patient—a matter of no small importance to some people.

An attempt is now being made in London to introduce Pollini's antisyphilitic powders, which are extensively used in Italy. Referring to this attempt the *Lancet* writes:—"Pollini's secret nostrum will not find support in the profession, in spite of the book now circulated containing cases under the care of some well-known men in various parts of Italy. Some pharmacological books give the composition of these powders, but M. Gasparini declares that all these receipts are very different from the true remedy.

TRADE REPORT.

CHEMICALS.

Since the date of our last publication there has been a slight improvement in the chemical trade, but the prices of some articles still show a tendency to decline. In the Alkali trade this tendency is most perceptible. About the middle of January, **Soda Crystals** were quoted at £4 12s. 6d. per ton, ex ship, but 2s. 6d. less for present delivery was accepted, and this reduction induced buyers to purchase rather freely. Manufacturers, however, declined to sell forward at this price. At the close of the month, business to a fair extent was done at £4 10s. ex ship, and afterwards at £4 7s. 6d. **Soda Ash** remains at 2d. per degree, landed. **Bicarbonate** has for some weeks been only in retail demand at 13s. per cwt. About this time last year it was quoted at 22s. The demand for **Bleaching Powder** has improved, in consequence of the strike of the coopers in Newcastle, and its price has advanced to 11s. 6d. per cwt. landed.

In **Acids** there has been little business done. The prices of **Citric**, **Oxalic**, and **Tartaric** have fallen to 1s. 10d., 8d., and 1s. 1¼d. respectively.

There has been an active demand for **Iodine**, and old dry seconds cannot now be obtained for less than 9½ per ounce.

Cream of Tartar has been much firmer, and is now quoted at 78s. to 80s. per cwt. **Refined Borax** is in good demand at 50s. **Sulphate of Quinine** (Pelletier's) is very dull at 4s. to 4s. 1d. per oz., according to quantity. Howards' was reduced in price during the past month, and is now obtainable at 4s. 3d. to 4s. 7d., according to quantit and mode of packing.

DRUGS.

In the Drug Market, on the 16th ult., the first fortnightly sales of the year commenced, with an unusually large assortment of goods. The effect of bringing forward the 3,000 lots included in the catalogues was to depress the prices of many articles. The most noteworthy results of these sales are given below:—

Aloes.—*Barbados*, very ordinary to good (385 gourds and 76 boxes) sold at £2 to £7 2s. 6d. *East India*, fine hard Socotrine (3 casks), £17 10s.; very ordinary to good soft, £2 2s. 6d to £7 7s. 6d. *Cape*, good fair to good, 28s. to 30s.; middling to fair, 25s. to 27s.; very ordinary to low middling, 12s. to 24s.

Bark.—*Yellow* (68 serons), good quill, 2s. 5d.; flat, 2s. 5d.; fair, 2s. 3d. to 2s. 4d. *Crown* and *Grey* (198 serons), rather ordinary to good quill, 1s. 3d. to 1s. 11d.; fine, 2s. to 2s. 2d.; very ordinary, 10d.; flat, 1s. *Red* (8 bales), ordinary to fair small, 2s. 8d. to 6s. 3d. *Pitayo* (50 bales), 9d. to 1s. *Columbian* (197 serons), 1s. 7d. to 1s. 8d.; damaged, 1s. 3d. to 1s. 7d. A single bale of *Simaruba* sold at 7d.

Balsam.—*Canada*, 1s. 5d.; *Capivi*, good bright, 1s. 8d. to 1s. 9d.; *Peru*, balsam and bottoms, old, 5s. 9d.

Camphor.—China and Japan (70 pks.), at £7, recent weight.

Colocynth.—Turkey (10 casks), at 10d.

Ergot of Rye.—Teneriffe, sold at 1s. 6d.

Gum.—*Ammoniacum*, good pale run drop, rather dirty, at £11 5s. to £11 10s.; ordinary drossy lump, 50s.; very ordinary, 24s. 6d. *Arabic.*—Turkey damaged, third to first class, 50s. to 56s. Gedda, 37s. East India, yellow and red sorts (98 packages), 67s. to 68s. 6d.; inferior, 50s. to 50s. 6d.; siftings, 45s. Cape, 46s. to 51s. Australian (98 packages), good, 42s. to 43s.; fair to good fair, 34s. 6d. to 38s.; inferior, 19s. to 25s.; siftings, 28s. to 28s. 6d. Mogador, good bold white, 65s. *Assafœtida* (73 cases), 62s. 6d. to 82s. 6d. *Benjamin.*—Sumatra, fair seconds, £8 7s. 6d. to £8 10s.; fair brown thirds, £5 17s. 6d. to £6; good, £6 12s. 6d. to £7. *Copal.*—Red Angola (9 cases and 171 barrels), 64s. to 66s. 6d.; White Angola (114 mats), middling, 44s.; dark, 30s. 6d. *Tragacanth*, brown to fair sorts, £8 5s. to £12.

Jalap.—Vera Cruz, second to third class mouldy, 4s. 1d. to 4s. 2d.; common, 2s. 11d. to 3s. 6d.

Musk.—Tonquin (51 caddies) middling to fine, 27s. to 38s. 6d.; Cabardine, 15s. to 16s. 6d.; good grain, 54s.

Nux Vomica.—Madras, good, rather small, 14s. 6d.

OILS.—*Castor*, straw to fair seconds, 5¾d. to 6¼d. *Cod-liver*, Newfoundland, good, 4s. 6d. *Essential*, Citronelle, Winter's, 3½d.; Common, 2¾d. to 3d. Cinnamon rather better 2s. 1d., ordinary 10d.; Sassafras, 3s. 6d.; Sandalwood, 1s. 6d.; Wood, from Rangoon, 6d. per lb. *Otto of Roses*, very ordinary, 2s. 8d.

RHUBARB.—200 chests were all sold, fair 5s. 3d. to 5s. 11d., good middling 4s. 5d. to 4s. 9d., middling 3s. 6d. to 3s. 8d, ordinary to low middling 2s. 10d. to 3s. 1d., mouldy to slightly mouldy 1s. 1d. to 2s. 3d., very inferior small 6¾d. to 7¾d.

ROOTS.—Orris, 30s., Colombo, fine 40s., inferior sorts, 23s. 6d. to 25s.; Seneka, 1s. 4d.; Pink, 9d.; China, 30s.; Galangal, 16s.

SARSAPARILLA.—Jamaica common to good, 1s. 2d. to 1s. 10d.; Honduras, 1s. 1d. to 1s. 4d.

SCAMMONY.—Small sales, 19s. to 25s.; very ordinary, 9s. 6d.

SENNA —Tinnevelly, low to good middling 1½d. to 7½d.; fine, 1s. 3½d.

The above quotations refer to the prices at which the articles named were sold. The number of lots bought in at these sales was unusually great.

The business more recently done in Drugs offers few points of interest. The price of OPIUM has advanced again, sales of fine Turkey have been made at 20s. A considerable supply of East India GUM ARABIC was brought forward last week, and buyers were readily found. The quantity offered amounted to 309 cases, and prices for a while gave way. Of this description of gum, 35 serons and 31 bags have lately been sold at the following prices:—Fine bold pale sorts 81s., good pale and amber 72s. to 73s., good middling ditto 68s. 6d. to 69s., small pale and reddish 65s. 6d. to 66s. 6d., small reddish 59s. to 60s., ordinary 54s., garblings 45s. 6d. to 48s., siftings 43s. to 46s. 6d., ordinary 37s. 6d. Of Australian, 67 casks have gone off at steady prices; middling frosted 38s. to 40s., fine 48s. 6d. Of 200 cases of China PRESERVED GINGER, a few lots sold last week at 11d. per lb.

OILS.

In the Oil market there has been moderate activity, and but little variation in prices. LINSEED OIL has lately been in moderate request at £34 10s. to £34 15s. on the spot here. For settlements of last month's contracts low prices were accepted for Hull Oil, but the market afterwards became firmer, but showed a slight relapse at the close, and rules at £34 on the spot, £34 10s. sellers month, and at £35 10s. March to June. RAPE OIL has been in good demand, and English brown is now worth £35 to £35 10s. on the spot, £36 paid for March, £36 10s. to £37 for May-June, £38 for the last four months, and 90 tons July-December sold to-day at £37 15s. Refined £37 to £37 10s, and Foreign £38 to £38 10s, brown £35 10s to £36 spot and £38 10s September-December. Only a limited business has been done in OLIVE OIL at £65 10s. to £67 for Mogador. £70 remains the price of Seville and Malaga up to £72 for Gallipoli. The market for COCOANUT OIL has been quiet, and only small transactions effected at £56 to £56 10s. for Cochin and at £49 10s. to £50 for Ceylon; 101 pipes offered of the former by auction last week were bought in, yellowish to fine white at £55, and twenty-two casks of the latter at £50. For Ceylon to arrive £49 has been accepted, and there are still sellers thereat. PALM OIL, with a plentiful supply has been difficult of sale, and there are no buyers of fine Lagos over £39 10s. The market for FISH OILS has continued devoid of animation. SPERM is nominally £106 to £108. Some small sales of Seal have been made at £33 to £39 10s. as in quality. At auction 26 tuns American CRUDE bought in at £106; headmatter, £108; 5 tuns bright met no offers, were withdrawn. 16 tuns Northern WHALE bought in at £38. Of 26 tuns and 20 tanks Southern fine double compass a small part sold at £38 10s., the remainder bought in thereat; also 20 tuns SHARK single and double compass £35, chiefly nick £32 10s. Of 24 tuns COD a small part sold at £34 to £34 10s. the remainder bought in at £34; dark, £31 to £32; and £39 tuns Newfoundland at £35. 10 tuns SEAL partly sold, good straw £36 5s., and yellow £35; ordinary straw bought in at £34 10s., and good brown at £34; boiled £30. 15 casks COD-LIVER partly sold at 4s.

TURPENTINE.—A further advance has been established in American SPIRITS the last prices paid were 30s. 6d. to 31s. on the spot, and 30s. 6d. for arrival.

PETROLEUM.—The market for American refined has of late been very quiet, buyers only taking what they require for immediate wants at 1s. 2¾d. for SW, and the aggregate business done has been less than usual at this season. Transactions forward have also been very limited; there are sellers of March-April deliveries at 1s 3d, but no buyers over 1s. 2½d.; to-day May has been sold at 1s. 2½d. For delivery the last four months 1s. 6d. would be taken. The present stock of Refined is 45,320, and the deliveries last week 2750 barrels against 41,000 and 2050 respectively corresponding week last year. NAPHTHA has been in more demand on spot at 2s. per gallon, at which some quantity has been disposed of, but for arrival no buyers can be found at any reasonable prices.

Monthly Statement

Of the STOCKS, LANDINGS, and DELIVERIES of the following GOODS at the PORT of LONDON, from Jan. 1 to Jan. 31, 1868 and 1867.

		Stock Jan. 31.		Landings.		Deliveries.	
		1868.	1867.	1868.	1867	1868.	1867.
Aloes	casks	3144	3367	147	146	173	186
	kegs	111	132	—	—	1	50
	gourds	1550	1004	—	2	203	—
Aniseed, Star	chests	320	474	—	1	14	104
Arrowroot	casks	12648	8593	627	41	715	902
	boxes and tins	18679	23827	414	1064	843	1576
Balsam	casks, &c.	253	320	87	10	23	59
Bark, Medicinal,	casks and cases	312	281	6	8	—	3
	serons, &c.	8873	12848	2161	1355	1053	932
Bark, Tanners	tons	74	105	—	52	—	125
Borax	packages	83	109	2	—	10	—
Beeswax	bales and serons	186	71	42	—	106	10
	casks and cases	1446	1347	114	163	55	110
	cakes	1406	1808	145	361	154	103
Brimstone	tons	120	1811	—	—	—	—
Camphor	packages	1634	2009	—	19	171	217
Cardamoms	chests	76	241	15	3	29	25
Cochineal—							
Honduras	serons	3286	535	69	22	198	222
Mexican	„	733	153	136	15	103	54
Teneriffe	„	7995	4902	4478	2838	1578	2188
Coculus Indicus	bags, &c.	983	804	—	—	10	—
Colombo.root	packages	2117	1598	3	—	218	24
Cream of Tartar	casks	262	501	18	46	21	36
Cubebs	bags	1231	1744	—	—	1	—
Dragonsblood	chests	112	87	26	—	11	20
Galls, E. I.	casks and cases	2607	2211	724	—	75	240
Mediterranean	sacks	27	74	—	—	42	—
Gum—							
Ammoniac	packages	191	228	7	5	3	1
Animi and Copal	„	1084	3314	19	62	185	319
Arabic, Barbary	„	130	296	23	82	53	103
Turkey	„	43	288	1	—	20	—
East India	„	1575	961	682	227	138	294
Assafœtida	„	123	193	70	—	42	10
Benjamin	„	1021	714	262	55	117	159
Dammar	„	1046	958	21	—	95	3
Galbanum	„	3	—	—	—	3	—
Gamboge	„	94	74	25	5	4	11
Guaiacum	„	84	69	—	10	—	—
Kino	„	99	29	—	—	—	—
Kowrie	tons	1539	1368	22	207	160	106
Mastic	packages	232	347	—	156	1	—
Myrrh, E. I.	„	57	82	49	20	26	2
Olibanum	„	1354	1569	265	—	111	510
Sandarac	„	187	299	87	267	39	111
Senegal	tons	66	43	2	2	6	6
Tragacanth	packages	35	21	3	—	6	—
Ipecacuanha	casks and bags	91	106	3	14	35	44
Jalap	bales	313	271	75	22	16	9
Lac-Dye	chests	8541	4898	648	325	687	886
Nux Vomica	packages	405	1631	90	1270	33	489
Oil—							
Castor	casks	87	94	4	—	—	9
	cases	442	576	265	60	250	141
	dppers and tins	12864	7556	9520	3119	1284	2889
Palm	tons	737	842	493	179	411	297
Cocoanut	„	3368	6100	623	89	549	326
Olive	casks, &c.	1323	1375	138	276	491	599
Aniseed	cans	801	1092	—	—	88	180
Cassia	„	1441	1890	60	—	104	81
Opium	chests, &c.	313	282	—	—	no	retrn
Rhubarb	chests..	526	768	116	—	109	154
Safflower—							
Bengal	bales	1876	1994	622	118	430	383
Bombay	„	69	191	—	—	27	10
Saffron	packages	10	10	1	—	1	—
Sarsaparilla	bales	291	957	107	112	152	203
Senna	bales, &c.	2322	2647	360	1027	280	189
Shellac	chests, &c.	12608	16275	1607	1068	1161	1040
Sticklac	„	2756	4968	3	11	56	130
Terra Japonica—							
Gambier	tons	2497	1913	1581	1310	566	754
Cutch	„	510	771	229	90	128	96
Turmeric	„	896	458	156	77	64	78
Vermilion	chests, &c.	75	78	—	—	6	12

Monthly Price Current.

[The prices quoted in the following list are those actually obtained in Mincing-lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

CHEMICALS.

	1868. January.		1867. January.	
	s. d.	s. d.	s. d.	s. d.
ACIDS—				
Acetic ....per lb.	0 4	0 0	0 4	0 0
Arsenious (see Arsenic)				
Citric ....per lb.	1 10	1 10½	1 11½	2 0
Nitric .... ,,	0 5	0 5½	0 5	0 5½
Oxalic .... ,,	0 8	0 8¼	0 10½	0 0
Sulphuric ...... ,,	0 0¾	0 1	0 0¾	0 1
Tartaric crystal .. ,,	1 1¼	0 0	1 3½	0 0
powdered ,,	1 1¾	1 2	1 3½	1 4
Antimony, ore......per ton	300 0	320 0	180 0	200 0
crude ..per cwt	21 0	23 0	23 0	24 0
regulus.. ,,	44 0	45 0	34 6	0 0
star .... ,,	44 0	45 0	34 0	0 0
Arsenic, lump...... ,,	16 0	16 6	15 0	15 6
powder.... ,,	7 3	7 6	7 0	7 3
Ashes (see Salts)............				
Brimstone, rough ..per ton	132 6	0 0	130 0	0 0
roll ....per cwt	10 8	11 0	10 3	0 0
flour.... ,,	14 0	14 6	12 0	0 0
Iodine, dry ....per oz.	0 9½	0 0	0 9¼	0 9½
Ivory Black, dry..per cwt.	0 0	0 0	8 0	0 0
Magnesia, calcined..per lb.	1 6	1 8	1 6	1 8
Mercury...... .. per bottle	137 0	0 0	137 6	140 0
Minium, red ......per cwt.	21 6	22 0	21 0	22 6
orange .... ,,	33 6	0 0	33 6	0 0
Precipitate, red ....per lb.	2 6	0 0	2 0	2 6
white .. ,,	2 5	0 0	2 5	0 0
Prussian Blue ...... ,,	1 0	1 10	1 0	1 10
SALTS—				
Alum ....per ton	150 0	155 0	150 0	155 0
powder .... ,,	170 0	175 0	170 0	175 0
Ammonia:				
Carbonate ......per lb.	0 5	0 5¼	0 5	0 5¼
Hydrochlorate, crude, white........ per ton	400 0	500 0	400 0	500 0
British (see Sal Ammoniac)				
Muriate (see Hydrochlorate)				
Sulphate ......per ton	280 0	290 0	225 0	230 0
Argol, Cape ......per cwt	65 0	75 0	75 0	85 0
France .... ,,	48 0	70 0	56 0	76 0
Oporto, red ,,	26 0	28 0	30 0	32 0
Sicily .... ,,	50 0	55 0	65 0	70 0
Naples, white ,,	60 0	70 0	66 0	71 0
Florence, white	75 0	80 0	85 0	90 0
,, red ,,	65 0	70 0	77 0	80 0
Bologna, white ,,	78 0	80 0	87 0	90 0
Ashes (see Potash and Soda)				
Bleaching powd..per cwt.	11 6	0 0	14 0	15 0
Borax, crude .... ,,	25 0	55 0	25 0	45 0
(Tincal) .. ,,	35 0	52 6	35 0	52 6
British refnd. ,,	50 0	52 6	70 0	0 0
Calomel ....per lb.	2 5	0 0	2 5	2 6
Copper:				
Sulphate ......per cwt.	24 6	25 0	25 0	26 0
Copperas, green ..per ton	55 0	60 0	57 0	60 0
Corrosive Sublimate..p.lb.	1 11	0 0	1 11	0 0
Cr. Tartar, French, p. cwt.	78 0	80 0	82 6	0 0
grey ,,	70 0	0 0	75 0	79 0
brown ,,	55 0	62 6	75 0	77 6
Epsom Salts ....per cwt.	8 6	8 9	8 6	0 0
Glauber Salts .... ,,	5 0	6 0	5 6	0 0
Lime:				
Acetate, white, per cwt.	13 0	21 6	10 0	18 0
Magnesia:				
Carbonate...... ,,	42 6	0 0	42 6	45 0
Potash:				
Bichromate ....per lb.	0 5	0 0	0 5	0 5¼
Carbonate:				
Potashes, Canada, 1st sort ......per cwt.	33 6	0 0	35 6	0 0
Pearlashes, Canada, 1st sort ......per cwt.	37 0	0 0	43 6	44 0
Chlorate ....per lb.	0 11½	1 0	1 0½	0 0
Hydriodate (see Potassium, Iodide)				
Muriate (see Potassium, Chloride)				
Prussiate ......per lb.	1 0	1 1	1 1	0 0
red .... ,,	1 0½	1 10	1 9½	1 10
Tartrate (see Argol and Cream of Tartar)				
Potassium:				
Chloride ......per cwt.	8 3	8 6	8 0	8 6
Iodide.......... per lb.	11 6	0 0	13 0	13 6
Quinine:				
Sulphate, British, in bottles ...... per oz.	4 3	4 6	4 10	0 0
Sulphate, French ,,	4 0	4 1	4 4	4 5
Sal Acetos ....per lb.	0 10½	0 0	1 0½	1 1
Sal Ammoniac, Brit. cwt.	33 0	34 0	35 0	37 0
Saltpetre:				
Bengal, 6 per cent. or under ......per cwt.	19 3	19 9	19 6	19 0
Bengal, over 6 per cent. per cwt.	10 0	19 3	18 6	19 3
Madras........ ,,	18 0	19 9	18 0	10 0
Saltpetre, continued:—				
Bomb & Kurrachee p.ct.	17 0	18 0	15 0	18 0
European...... ,,	21 0	22 0	20 0	0 0
British, refined ,,	22 0	23 6	23 0	23 6
Soda:				
Bicarbonate.... ,,	12 9	13 0	22 0	0 0
Carbonate:				
Soda Ash....per deg.	0 2	0 2¼	0 2⅝	0 2¾
Soda Crystals per ton.	90 0	0 0	115 6	0 0
Hyposulphite..per cwt.	22 0	0 0	18 0	0 0
Nitrate........ ,,	10 0	11 6	11 0	12 6
Verdigris .... per lb.	0 11	1 0	0 11	1 0
Sugar of Lead, White, cwt.	37 0	37 0	37 6	38 0
Brown .... ,,	28 0	29 0	20 0	30 0
Sulphur (see Brimstone)				
Vermilion, English..per lb.	2 9	3 1	2 9	3 2
China.... ,,	2 9	3 0	2 6	2 9

DRUGS.

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	s. d.	s. d.	s. d.	s. d.
Aloes, Hepatic....per cwt.	90 0	180 0	80 0	180 0
Socotrine .. ,,	180 0	295 0	180 0	300 0
Cape, good.. ,,	30 0	32 0	34 0	35 0
Inferior ,,	18 0	29 0	21 0	33 0
Barbadoes ,,	75 0	220 3	60 0	240 0
Ambergris, grey ....per oz.	32 0	36 0	35 0	0 0
BALSAMS—				
Canada .... per lb.	1 5	0 0	1 3	0 0
Capivi .... ,,	1 8	1 0	1 8½	1 9½
Peru .... ,,	8 0	0 0	5 3	0 0
Tolu .... ,,	2 7	0 0	3 6	0 0
BARKS—				
Canella alba ....per cwt.	22 0	27 0	40 0	70 0
Cascarilla........ ,,	25 0	35 0	18 0	29 0
Peru, crown & grey per lb.	1 3	2 2	1 2	2 3
Calisaya, flat ,,	2 6	2 8	2 6	2 11
quill ,,	2 3	2 5	2 2	2 7
Carthagena ,,	0 9	1 3	0 10	1 6
Pitayo .... ,,	1 0	1 3	0 7	2 0
Red ...... ,,	2 6	11 0	2 6	12 0
Bucho Leaves ...... ,,	0 2½	0 9	0 3¾	0 11
Camphor, China.. per cwt.	140 0	142 6	142 6	147 6
Japan ,,	140 0	142 6	147 6	150 0
Refin Eng. per lb.	1 10	1 10½	1 11	0 0
Cantharides ...... ,,	2 0	0 0	2 2	2 5
Chamomile Flowers p. cwt	45 0	80 0	50 0	120 0
Castoreum .... per lb.	5 0	32 0	1 0	20 0
Dragon's Blood, reed p. ct.	190 0	230 0	200 0	280 0
lump ,,	100 0	230 0	90 0	280 0
FRUITS AND SEEDS (see also Seeds and Spices)				
Anise, China Star pr cwt.	120 0	125 0	87 6	90 0
German, &c. ,,	30 0	42 0	26 0	46 0
Beans, Tonquin .. per lb.	1 0	1 0	1 0	1 10
Cardamoms, Malabar good ,,	7 6	8 6	5 6	6 0
inferior ,,	5 3	7 3	3 9	5 6
Madras ,,	5 0	7 9	3 6	5 0
Ceylon ,,	2 10	3 3	3 0	3 9
Corozo Nuts.... per cwt.	10 0	13 0	9 0	15 0
Cassia Fistula.. ,,	20 0	32 0	15 0	34 0
Castor Seeds .. ,,	10 0	12 0	10 0	12 0
Cocculus Indicus ,,	22 6	25 0	25 0	30 0
Colocynth, apple.. per lb.	0 6½	0 10	0 7½	0 11
Croton Seeds .. per cwt.	90 0	105 0	145 0	180 0
Cubebs .... ,,	45 0	46 0	60 0	65 0
Cummin........ ,,	10 0	20 0	16 0	20 0
Dividivi .... ,,	11 0	13 0	12 0	13 6
Fenugreek...... ,,	11 0	12 0	20 0	0 0
Guinea Grains .. ,,	45 0	48 0	54 0	57 0
Juniper Berries ,,	9 0	10 0	8 6	10 0
Myrobalans .... ,,	12 6	17 0	10 0	16 6
Nux Vomica.... ,,	14 0	16 0	7 6	10 6
Tamarinds, East India ,,	19 0	25 0	25 0	26 0
West India ,,	16 0	25 0	12 0	19 0
Vanilla, large .... per lb.	9 0	14 0	10 0	16 0
inferior ,,	4 0	3 0	4 0	9 0
Wormseed per cwt.	1 0	0 0	5 6	6 0
Ginger, Preserved, in bond (duty 1d. per lb.) per lb.	0 9	1 0	0 10	1 1
Gums (see separate list)				
Honey, Narbonne ,,	0 0	0 0	50 0	70 0
Cuba .... ,,	25 0	33 0	26 0	41 0
Jamaica.. ,,	22 0	43 0	25 0	55 0
Ipecacuanha .... ,,	7 3	7 0	9 4	9 6
Isinglass, Brazil . ,,	2 4	3 11	2 2	4 4
Tongue sort ,,	3 0	4 1	3 3	4 10
East India ,,	2 0	4 0	1 10	4 4
West India ,,	3 7	4 0	3 9	4 0
Russ. long staple	9 0	10 0	10 0	11 0
,, leaf ,,	6 0	8 9	8 0	10 6
,, Simovia	1 6	2 6	1 9	2 6
Jalap, good ...... ,,	4 3	5 0	4 8	5 6
infer. & stems ,,	0 9	3 10	0 9	4 6
Lemon Juice.... per degree	0 0¾	0 0⅞	0 0¾	0 0⅞
Liquorice, Spanish per cwt.	65 0	70 0	65 0	75 0
Italian ,,	50 0	60 0	50 0	70 0
Manna, flaky .... ,,	4 0	0 0	4 0	4 6
small...... per lb.	1 10	0 0	1 10	2 0
Musk.............. per oz.	21 0	38 0	20 0	35 0
OILS (see also separate List)				
Almond, expressed per lb.	1 10	0 0	1 9	0 0
Castor, 1st pale .... ,,	0 6¾	0 7¼	0 6½	0 6¾
second .... ,,	0 6	0 6¼	0 6	0 6¼
infer. & dark ,,	0 5½	0 5¾	0 5¾	0 6
Bombay (in casks)	0 0	0 0	6 5½	0 6
Cod Liver ......per gall.	4 6	5 6	4 3	8 0
Croton............per oz.	1 2	1 0	1 2	1 6
Essential Oils:				
Almond ....per lb.	40 0	0 0	36 0	0 0

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Essential Oils, *continued*:—	s.	d.	s.	d.	s.	d.	s.	d.
Anise-seed ......per lb.	11	6	0	0	9	9	10	0
Bay ....per cwt.	80	0	90	0	80	0	90	0
Bergamot ......per lb.	11	0	16	0	10	0	13	0
Cajeput (in bond) per oz.	0	2	0	2½	0	2¼	0	2½
Caraway ....per lb.	5	0	6	6	5	0	6	6
Cassia .... ,,	6	7	6	8	7	6	7	7
Cinnamon ......per oz.	1	3	3	6	1	6	3	6
Cinnamon-leaf .. ,,	0	5	0	7	0	4	0	6
Citronelle ...... ,,	0	2¾	0	3	0	3¼	0	3½
fine.... ,,	0	3½	0	3¾	0	4¼	0	0
Clove............per lb.	2	6	0	0	2	7	0	0
Juniper .... ,,	1	8	2	0	1	6	1	9
Lavender........ ,,	2	9	3	9	3	0	4	0
Lemon.......... ,,	5	0	8	0	6	0	10	0
Lemongrass ....per oz.	0	6½	0	7	0	11	1	1
Neroli .... ,,	3	0	4	6	3	6	4	6
Nutmeg .... ,,	0	3	0	9	0	6	0	11
Orange..........per lb.	5	0	7	0	5	0	7	0
Otto of Roses....per oz.	16	0	20	0	17	0	21	0
Peppermint:								
American ....per lb.	20	0	21	0	20	0	21	0
English ...... ,,	35	0	43	0	33	0	35	0
Rosemary ...... ,,	1	9	2	0	1	9	2	0
Sassafras........ ,,	3	0	3	3	3	0	3	6
Spearmint ...... ,,	10	0	25	0	16	0	0	0
Thyme.......... ,,	1	10	4	0	2	0	3	0
Mace, expressed .. per oz.	0	2¼	0	2½	0	1	0	9
OPIUM, Turkey ...... ,,	19	6	20	6	17	6	17	9
Egyptian .... ,,	3	6	7	0	3	6	7	0
QUASSIA (bitter wood) per ton	100	0	105	0	100	0	110	0
RHUBARB, China, good and fine ....per lb.	6	0	9	6	6	9	11	3
Good, mid. to ord. ,,	1	6	5	9	1	8	5	6
Dutch trimmed ,,	10	0	12	0	9	6	10	0
Russian .... ,,	9	0	10	0	9	0	10	0
ROOTS—								
Calumba ....per cwt.	22	0	30	0	70	0	80	0
China .... ,,	30	0	0	0	25	0	33	0
Galangal .... ,,	16	0	0	0	12	0	0	0
Gentian .... ,,	16	0	17	0	16	0	17	0
Hellebore ...... ,,	26	0	32	0	26	0	32	0
Orris............ ,,	36	0	40	0	32	0	37	0
Pellitory .... ,,	58	0	60	0	60	0	0	0
Pink..............per lb.	0	9	0	11	3	6	4	0
Rhatany.......... ,,	0	6	0	10	0	6	1	0
Senega........... ,,	1	5	0	0	1	9	2	0
Snake .... ,,	2	0	2	6	4	0	0	0
SAFFRON, Spanish .. ,,	30	0	34	0	36	0	38	0
SALEP ....per cwt.	97	6	105	0	110	0	120	0
SARSAPARILLA, Lima per lb.	0	0	0	0	1	0	1	4
Para.............. ,,	0	0	0	0	0	11	1	1
Honduras .... ,,	0	10	1	4	0	10	1	6
Jamaica .... ,,	1	0	2	1	1	0	2	0
SASSAFRAS ....per cwt.	10	0	0	0	8	0	0	0
SCAMMONY, Virgin ..per lb.	28	0	36	0	30	0	40	0
second & ordinary ,,	11	0	23	0	12	0	23	0
SENNA, Bombay .... ,,	0	2	0	3½	0	3½	0	4½
Tinnivelly .... ,,	0	2¼	0	10	0	3	0	9
Alexandria........ ,,	0	5	0	10	0	5	0	10
SPERMACETI, refined.. ,,	1	0	0	0	1	2	1	2½
American .... ,,	1	6	0	0	1	1	1	1½
SQUILL.............. ,,	0	1½	0	2	0	2	0	3¼

GUMS.

	1868.				1867.			
AMMONIAC, drop ..per cwt.	180	0	220	0	180	0	200	0
lump .. ,,	120	0	160	0	80	0	160	0
ANIMI, fine washed ,,	210	0	230	0	210	0	230	0
bold scraped ,,	190	0	215	0	190	0	200	0
medium .. ,,	150	0	180	0	165	0	190	0
small ...... ,,	100	0	147	0	100	0	160	0
dark ...... ,,	70	0	100	0	80	0	105	0
ARABIC, E. I., fine pale picked .. ,,	82	0	85	0	110	0	120	0
srts, gd. to fin ,,	70	0	80	0	95	0	105	0
red & mixd ,,	42	0	60	0	80	0	90	0
TURKEY, pick. gd to fin. ,,	170	0	210	0	195	0	230	0
second & inf. ,,	85	0	160	0	100	0	170	0
in sorts .. ,,	75	0	80	0	80	0	05	0
Gedda.... ,,	27	0	40	0	64	0	66	0
BARBARY, white .. ,,	02	0	65	0	90	0	95	0
brown .. ,,	70	0	75	0	83	0	88	0
AUSTRALIAN ...... ,,	34	0	49	0	60	0	67	0
ASSAFETIDA, com. to gd ,,	60	0	100	0	35	0	95	0
BENJAMIN, 1st qual. ,,	520	0	660	0	540	0	720	0
2nd ,, ,,	350	0	500	0	260	0	520	0
3rd ,, ,,	110	0	360	0	80	0	320	0
COPAL, Angola, red ,,	60	0	70	0	70	0	77	0
Benguela .. ,,	64	0	75	0	60	0	80	0
Sierra Leone..per lb.	0	6	1	2	0	5	0	11½
Manilla ....per cwt.	26	0	45	0	26	0	48	0
DAMMAR, pale .... ,,	68	0	76	0	75	0	84	0
EUPHORBIUM ...... ,,	18	0	21	0	20	0	22	0
GALBANUM .... ,,	240	0	280	0	200	0	220	0
GAMBOGE, pckd pipe ,,	860	0	920	0	660	0	800	0
in sorts.. ,,	700	0	840	0	400	0	600	0
GUAIACUM ....per lb.	0	6	2	0	0	8	1	10
KINO..............per cwt.	120	0	100	0	300	0	400	0
KOWRIE, rough.... ,,	31	0	38	0	27	0	38	0
scraped .. ,,	40	0	75	0	40	0	90	0
MASTIC, picked......per lb.	5	6	6	6	7	0	7	6
MYRRH, gd. & fine per cwt.	100	0	220	0	150	0	180	0
sorts...... ,,	100	0	170	0	80	0	140	0
OLIBANUM, p. sorts ,,	80	0	82	6	70	0	77	6
amber & ylw. ,,	65	0	77	6	60	0	67	6
garblings .... ,,	27	0	45	0	23	0	43	0
SENEGAL ....per cwt.	80	0	90	0	105	0	110	0
SANDARAC .... ,,	85	0	108	0	85	0	110	0
Gums, *continued*:—	s.	d.	s.	d.	s.	d.	s.	d.
THUS.............. ,,	12	0	0	0	20	0	0	0
TRAGACANTH, leaf.. ,,	240	0	290	0	200	0	320	0
in sorts ,,	160	0	220	0	60	0	170	0

OILS.

	1868.				1867.			
	£	s.	£	s.	£	s.	£	s.
SEAL, pale..........per tun	39	0	39	10	46	0	48	0
yellow to tinged ,,	35	0	38	0	42	0	44	0
brown........ ,,	33	0	34	0	39	0	40	0
SPERM, body ...... ,,	106	0	108	0	139	0	140	0
headmatter ,,	0	0	0	0	136	0	0	0
COD................ ,,	34	10	35	0	42	0	0	0
WHALE, South Sea, pale ,,	38	0	38	10	45	0	0	0
yellow ,,	37	0	37	10	44	0	0	0
brown ,,	35	0	30	0	40	6	0	0
East India, Fish ,,	35	0	0	0	34	0	0	0
OLIVE, Gallipoli ...... ,,	72	0	0	0	63	0	0	0
Trieste ...... ,,	71	0	0	0	61	0	0	0
Levant ...... ,,	66	0	0	0	58	10	0	0
Mogador...... ,,	65	10	67	0	58	0	0	0
Spanish ...... ,,	70	0	0	0	60	0	0	0
Sicily .... ,,	69	0	0	0	59	0	0	0
COCOANUT, Cochin.. per ton	55	0	56	0	58	0	0	0
Ceylon .. ,,	49	10	50	0	50	0	50	5
Sydney ,,	42	0	49	0	41	0	46	0
GROUND NUT AND GINGELLY:								
Bombay	50	0	0	0	50	0	0	0
Madras..................	50	0	53	0	54	0	55	0
PALM, fine	39	10	40	0	40	0	0	0
LINSEED	34	10	34	15	35	15	0	0
RAPESEED, English, pale ..	37	0	37	10	39	0	0	0
brown........	35	0	35	10	36	0	0	0
Foreign pale....	38	0	38	10	41	0	42	0
brown........	35	10	0	0	38	10	39	0
COTTONSEED	33	0	41	0	30	0	35	10
PETROLEUM, Crude	10	0	11	0	12	0	0	0
	s.	d.	s.	d.	s.	d.	s.	d.
refined, per gall.	1	2¾	1	3	1	5½	1	6
Spirit ,,	2	0	2	1	1	0	0	6
	£	s.	£	s.	£	s.	£	s.
LARD......................	64	0	0	0	64	0	0	0
TALLOW	37	0	0	0	30	0	38	0

SEEDS.

	1868.				1867.			
	s.	d.	s.	d.	s.	d.	s.	d.
CANARY ....per qr.	54	0	70	0	42	0	58	0
CARAWAY, English per cwt.	44	0	46	0	0	0	0	0
German, &c.....	40	0	48	0	0	0	0	0
CORIANDER	0	0	0	0	18	0	20	0
HEMP ....per qr.	42	0	44	0	44	0	46	0
LINSEED, Black Sea & Azof per qr.	64	6	65	0	65	0	0	0
Calcutta ,,	66	0	0	0	66	6	0	0
Bombay ,,	67	0	67	6	68	0	0	0
St. Petersbrg. ,,	63	0	0	0	61	6	64	0
Archangel ,,	57	0	58	0	0	0	0	0
Mustard, brown..per bshl.	0	0	0	0	15	0	17	0
white.. ,,	8	0	10	6	12	0	15	0
POPPY, East India per qr.	56	0	0	0	62	0	63	0

SPICES.

	1868.				1867.			
	s.	d.	s.	d.	s.	d.	s.	d.
CASSIA LIGNEA ....per cwt.	114	0	121	0	110	0	0	0
Vera .... ,,	50	0	70	0	40	0	60	0
Buds .... ,,	170	0	190	0	130	0	140	0
CINNAMON, Ceylon,								
1st quality ....per lb.	1	11	2	6	1	6	2	9
2nd do. ...... ,,	1	6	2	3	1	2	2	5
3rd do. ...... ,,	1	4	2	2	1	0	2	0
Tellicherry ...... ,,	0	0	0	0	1	6	1	11
CLOVES, Penang.... ,,	0	10	0	11½	0	11	1	1
Amboyna........ ,,	0	4¼	0	5¾	0	5	0	5¾
Zanzibar .... ,,	0	3⅔	0	3¾	0	3	0	3½
GINGER, Jam., fine per cwt.	100	0	150	0	120	0	180	0
Ord. to good .. ,,	40	0	95	0	58	0	115	0
African.......... ,,	31	6	32	6	38	0	0	0
Bengal .... ,,	34	0	35	0	26	0	27	0
Malabar .... ,,	0	0	0	0	29	0	30	0
Cochin .... ,,	44	0	115	0	63	0	125	0
PEPPER, Blk. Malabar, per lb.	0	4¼	0	5	0	4	0	5½
White, Tellicherry ,,	0	9	1	9¼	0	9	1	6½
Cayenne .... ,,	0	5½	0	8	0	6	0	9

VARIOUS PRODUCTS.

	1868.				1867.			
	s.	d.	s.	d.	s.	d.	s.	d.
GLUE, Town......per cwt.	40	0	60	0	42	0	62	0
French...... ,,	52	0	62	0	52	0	64	0
GUANO—								
African, &c.......per ton.	70	0	110	0	70	0	110	0
Peruvian .... ,,	0	0	0	0	240	0	0	0
COCHINEAL—								
Honduras, black ..per lb.	3	3	4	4	3	2	4	10
,, silver .. ,,	3	2	3	8	3	3	3	10
,, pasty .. ,,	1	6	3	0	2	6	3	2
Mexican, black .... ,,	3	2	3	6	3	4	3	9
,, silver .... ,,	2	10	0	0	3	4	3	5
Teneriffe, black.... ,,	3	0	4	0	3	4	4	7
,, silver.... ,,	2	10	3	5	3	3	3	7
LAC, SHELLAC, orange p. cwt.	77	0	92	0	80	0	04	0
Liver & nat. orange ,,	57	0	74	6	52	6	75	0
Garnet............ ,,	57	0	63	0	50	0	57	6
Button, dark to mid. ,,	60	0	80	0	52	6	75	0
Good and fine .. ,,	85	0	110	0	75	0	90	0
SEEDLAC.......... ,,	45	0	70	0	65	0	95	0
STICKLAC .... ,,	50	0	65	0	35	0	80	0
PUMICE STONE ..per ton	120	0	160	0	100	0	160	0
SOAP, Castile ....per cwt.	38	0	39	0	0	0	0	0
Marseilles.... ,,	40	0	0	0	40	0	42	0
SPONGE, Turk. fin pkd pr lb.	12	0	14	0	12	0	14	0
Fine to good .. ,,	5	0	11	0	5	0	11	0
Ordinary...... ,,	2	0	4	0	2	0	4	0
Bahama .... ,,	0	8	1	8	0	8	1	9